Tempco Radiant Quartz Heaters are one of the most efficient sources of radiant energy. They are ideally suited for processes that require wavelengths in the medium 4.0-2.4 micron band for efficient operation. These heaters are capable of generating full heat output in 80-100 seconds with a cool-down range of 180-225 seconds depending on the mass of the resistance coil and power density level.

They offer excellent life when used in either rapid cycling or continuous radiant heating applications. To achieve the best operating life, these quartz heaters should be operated with surface watt densities in the 35-40 watts per square inch range, not exceeding the maximum power densities specified below.

**Construction Features**

The heater consists of a helically wound resistance wire coil enclosed in a pure vitreous silica fused quartz tube with a translucent (semi-opaque) surface. The tubing is terminated at the ends with specially designed ceramic caps securely fastened with high temperature ceramic cement providing support for the field wiring screw terminals used for power connections.

The diffusion effect of the opaque quartz tube surface broadens the emitted wavelength range without creating objectionable glare due to emissions in the visible spectrum. Optimum design provides a clear red color on the translucent tube surface when operating at full line voltage. The emitted wavelength band is almost completely absorbed by the process and considered best for most industrial radiant applications.

**Typical Applications**

- Shrink Packaging Tunnels
- Laminating
- Thermoforming
- Plastic Forming
- Fusing Plastics
- Vulcanizing Rubber
- Sterilization
- Sealing
- Food Warming
- Thawing
- Electrostatic Copying Equipment
- Curing Rubber
- Drying Textiles
- Drying Lacquers and Paints
- Food Processing
- Drying Photo Film Equipment
- Drying Sand Cores
- Space Heaters
- Thermal Copying Equipment
- Drying Sand Cores
- Space Heaters
- Thermal Copying Equipment

### QUARTZ HEATER SPECIFICATIONS — DIMENSIONAL

**Diameters:** 3/8", 1/2" and 5/8"

**Max. Length:**
- 3/8" dia. – 50"
- 1/2" dia. – 100"
- 5/8" dia. – 100"

**Length Tolerance:**
- Up to 12" long ±1/8" Minimum
- Over 12" long ±2%

### QUARTZ HEATER SPECIFICATIONS — ELECTRICAL

- **Max. Volts:** 480 Volts
- **Max. Amperage:** 20 Amps
- **Resistance Tolerance:** +10%, −5%
- **Wattage Tolerance:** +5%, −10%
- **Max Watt Density:** 40 Watts/sq. in.

### Type ARK Vitreous Silica Quartz Tube Panel Arrays

Custom 4" high Type ARK panels with 1/2" diameter quartz elements are available. Tempco will design and build to your specifications. Consult us with your requirements.

**Warning:** Quartz Heaters are designed to be used in a Horizontal Position Only

**View Product Inventory @ www.tempco.com**
Vitreous Silica Quartz Tube

Standard Sizes and Electrical Ratings

Vitreous Silica Quartz Tube heaters listed have Type T1 termination.

<table>
<thead>
<tr>
<th>Quartz Tube Diameter</th>
<th>Overall Length in</th>
<th>Heated Length in</th>
<th>Watts</th>
<th>Part Numbers</th>
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<tr>
<td></td>
<td>Overall Length in</td>
<td>Heated Length in</td>
<td>Watts</td>
<td>Part Numbers</td>
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<td>571/2</td>
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<td>591/2</td>
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</table>

Terminations

Type T1  Standard Termination
10-32 thread screw terminal standard termination.

Type T2  Panel Mount Bushings
10-32 thread screw terminals with extension bushings for CRA/TRH housing assemblies.

Type ST  Tabs with Slotted Holes
1/2" wide × 3/4" long, with a 9/32" × 3/8" slot. Alternate mounting method.

Type FT  Quick Disconnect Fuse Type
Fuse-type connector provides ease of installation. Connectors are 3/8" OD × 1/2" long brass.

Type L1  Straight-Out Leads
10" flexible lead wire externally spliced standard. If longer leads are required, specify.

Type C4  Ceramic Caps with Leads
This termination provides 10-32 screw terminals insulated with ceramic terminal covers. Screws are prewired with 10" flexible lead wire. If longer leads are required, specify (also for T1 or T2).

Ordering Information

Catalog Heaters
Order by Part number for standard heaters listed above.
Part Numbers listed are for heaters supplied with Type 1 Termination. For other terminations a Part Number will be issued at time of order.

Custom Engineered/Manufactured Heaters
Understanding that an electric heater can be very application specific, for sizes and ratings not listed, TEMPCO will design and manufacture a Radiant Quartz Heater to meet your requirements.

Please Specify the following:
- Diameter
- Voltage
- Overall Length
- Termination Type
- Heated Length
- Lead Length; if applicable
- Wattage
- Mounting Clamps (See page 7-67)

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov.
Designed for use in applications that require rapid on/off response and fast heat-up and cooldown rates. These heater assemblies are designed to operate in the medium wavelength range of 4.0 to 2.4 microns (700 to 1715°F peak emitter temperatures). These Modular Housing assemblies utilize a .50 diameter translucent “milky white” vitreous quartz tube enclosing a high temperature resistance wire coil. The diffusion effect of the translucent quartz tube surface broadens the emitted infrared wavelength range obtained without objectionable glare due to low emissions in the visible spectrum. The units have either single or dual heaters mounted at the focal point of a polished aluminum reflector within the housing. These heater assemblies are available in a wide range of power densities. For housing dimensions and mounting details see page 7-75.

### Design Features

- Direct Retrofit into existing NEMA 1 applications
- Rugged Universal 2000 anodized aluminum housing
- Wattage range of 600W to 7200W in standard designs
- Voltages of 120-480V available depending on heated length
- Power densities up to 65w/in per heater (20 amps max/heater)
- Maximum Housing assembly length 84”; minimum 15”
- Fast response, 40-80 sec for full element heat-up
- Full cooldown in less than 4-8 minutes
- Single end wiring option available
- Multiple heat/dual voltage wiring options for dual heater units
- Utilizes standard TRH removable guard designs
- External power wiring options available

### Standard (Non–Stock) KRH1 Sizes & Ratings (55-60 W/in.) — Single Element Double End Termination

<table>
<thead>
<tr>
<th>Wattage</th>
<th>Volts</th>
<th>Overall Length in</th>
<th>Heated Length in</th>
<th>Part Number without Guard</th>
<th>Part Number with Guard</th>
<th>Replacement Element Part Number</th>
<th>Replacement Protective Wire Guard</th>
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<td>120 208 240 277</td>
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**NOTES:** See page 7-75 for housing dimensions and mounting details.

Shipped with Instruction Sheet IDP-129-104 for installation, wiring and maintenance information.
### KRH Quartz Radiant Heater Assemblies

Quartz Sheath Medium Wave Radiant Heater Assemblies in a Universal 2000 Housing

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#### Standard (Non–Stock) KRH2 Sizes & Ratings (110–120 w/in.) — Double Element Double End Termination

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<th>Wattage</th>
<th>Volts</th>
<th>Overall Length</th>
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<th>Part Number with Guard</th>
<th>Replacement Element Part Number</th>
<th>Replacement Protective Wire Guard</th>
<th>Replacement Reflector Set Part Number</th>
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<td>SMPR-1024</td>
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</table>

**NOTES:** See page 7-75 for housing dimensions and mounting details.

- The Quartz elements are supplied at the same rated voltage as the overall assembly to be wired in parallel.
- 120V or 240V rated assemblies can be used at twice the rated voltage by wiring the elements in series.
- 120/240V or 240/480V
- Shipped with Instruction Sheet IDP-129-104 for installation, wiring and maintenance information.

#### Installation Notes:

- Series KRH units are for Horizontal mounting only. KRD elements have T2, 10-32 terminals at both ends for field wiring connections. See page 7-71 for details. Wiring used in the junction boxes must be rated 250°C or higher, sized per NEC/NFPA for unit voltage and current carrying capacity. Use only 450°C rated wiring in internal wireways for single end or multiple heat options. When using copper wire for field wiring, use only nickel plated or nickel clad conductors.
- Unplated or silver plated copper must not be used. See page 7-82 & 7-83 for wiring options. Do not mount heater housing closer than 6" to any combustible or structural material that does not have at least a 200°C continuous temperature rating.
- Danger: Hazard of fire. These heaters are not for use in atmospheres where flammable or combustible vapors, dust, gases, or liquids are present as defined in the National Electrical Code. Where solvents, water vapor or other VOCs are being evaporated from the process, it is necessary to provide substantial quantities of ventilating air to remove all resulting vapors.

#### Wiring Options

- Series KRH Heaters can be prewired with plain leads, stainless steel armor cable, galvanized armor cable, stainless steel wire braid or SJO cable. For additional information See Wiring Options on page 7-17.

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