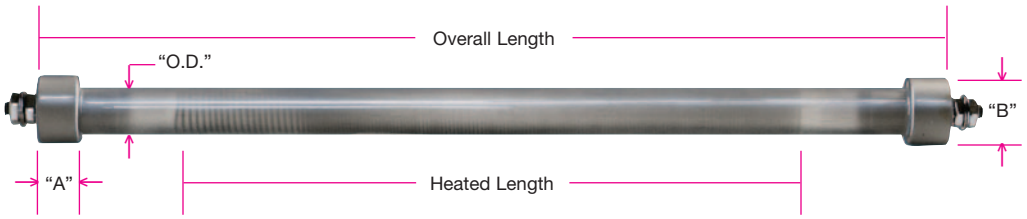
Radiant Process Heaters

KRD Radiant Quartz Heaters

Made in USA

Vitreous Silica Quartz Tube



Quartz Heater Dimensions

Quartz Tube O.D.	"A"	"B"
3/8"	3/8"	5/8"
1/2"	1/2"	7/8"
5/8"	1/2"	7/8"

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*
- *Food Processing*
- *Drying Photo Film Equipment*
- *Curing Rubber*
- *Drying Textiles*
- *Drying Lacquers and Paints*
- *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

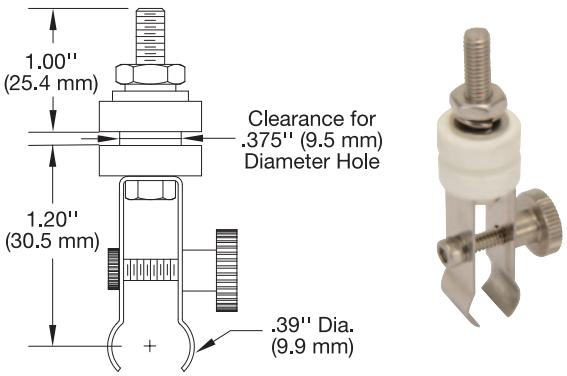
Max. Amperage: 20 Amps

Resistance Tolerance: +10%, –5%

Wattage Tolerance: +5%, –10%

Max Watt Density: 40 Watts/sq. in.

Mounting Clamp for 3/8 Quartz Tube OD



Mounting Clamp Part Number: CRK00059

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

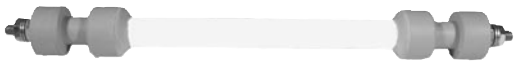
Vitreous Silica Quartz Tube heaters listed have Type T1 termination.

Quartz Tube Diameter	Overall Length in	Overall Length mm	Heated Length in	Heated Length mm	Watts	Part Number 120V	Part Number 240V
3/8"	14	355.6	12½	317.5	480	KRD00001	KRD00002
	20	508.0	18½	469.9	720	KRD00003	KRD00004
	26	660.4	24½	622.3	960	KRD00005	KRD00006
	38	965.2	36½	927.1	1450	KRD00007	KRD00008
	48	1219.2	46½	1181.1	1900	—	KRD00009
1/2"	18	457.2	16½	419.1	900	KRD00010	KRD00011
	20	508.0	18½	469.9	900	KRD00012	KRD00013
	26	660.4	24½	622.3	1200	KRD00014	KRD00015
	36	914.4	34½	876.3	1800	KRD00016	KRD00017
	38	965.2	36½	927.1	1800	KRD00018	KRD00019
	42	1066.8	40½	1028.7	1580	KRD00020	KRD00021
	48	1219.2	46½	1181.1	1820	KRD00022	KRD00023
	50	1270.0	48½	1231.9	2400	—	KRD00024
	54	1371.6	52½	1333.5	2060	—	KRD00025
	60	1524.0	58½	1485.9	2300	—	KRD00026
	66	1676.4	64½	1638.3	2540	—	KRD00027
	72	1828.8	70½	1790.7	2780	—	KRD00028
5/8"	24	609.6	21	533.4	1075	KRD00029	KRD00030
	26	660.4	23	584.2	1800	KRD00031	KRD00032
	30	762.0	27	685.8	1375	KRD00033	KRD00034
	38	965.2	35	889.0	2500	—	KRD00035
	42	1066.8	39	990.6	1975	KRD00036	KRD00037
	48	1219.2	45	1143.0	2275	—	KRD00038
	50	1270.0	47	1193.8	3400	—	KRD00039
	54	1371.6	51	1295.4	2575	—	KRD00040
	60	1524.0	57	1447.8	2875	—	KRD00041
	62	1574.8	59	1498.6	4200	—	KRD00042
	66	1676.4	63	1600.2	3175	—	KRD00043
	72	1828.8	69	1752.6	3475	—	KRD00044

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.
Standard lead time is 3 weeks.

Please Specify the following:

- ❑ Diameter
- ❑ Overall Length
- ❑ Heated Length
- ❑ Wattage
- ❑ Voltage
- ❑ Termination Type
- ❑ Lead Length; if applicable
- ❑ Mounting Clamps (See page 7-67)

⚠ **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

Made in USA

KRH Quartz Radiant Heaters

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

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 4.0-2.4 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

Wattage	Volts	Overall Length in	Overall Length mm	Heated Length in	Heated Length mm	Part Number without Guard	Part Number with Guard	Replacement Element Part Number	Replacement Protective Wire Guard	Replacement Reflector Set Part Number
600	120 208 240 277	18	457	9.75	248	KRH10001 KRH10002 KRH10003 KRH10004	KRH10030 KRH10031 KRH10032 KRH10033	KRD00266 KRD00267 KRD00252 KRD00268	GRD-104-104	SMPR-1018
900	120 208 240 277	24	610	15.75	401	KRH10005 KRH10006 KRH10007 KRH10008	KRH10034 KRH10035 KRH10036 KRH10037	KRD00269 KRD00270 KRD00271 KRD00272	GRD-104-105	SMPR-1019
1300	120 208 240 277 480	30	762	21.75	553	KRH10009 KRH10010 KRH10011 KRH10012 KRH10013	KRH10038 KRH10039 KRH10040 KRH10041 KRH10042	KRD00273 KRD00274 KRD00275 KRD00276 KRD00277	GRD-104-106	SMPR-1020
1600	208 240 277 480	36	914	27.75	705	KRH10014 KRH10015 KRH10016 KRH10017	KRH10043 KRH10044 KRH10045 KRH10046	KRD00278 KRD00279 KRD00280 KRD00281	GRD-104-107	SMPR-1021
2400	208 240 277 480	48	1219	39.75	1010	KRH10018 KRH10019 KRH10020 KRH10021	KRH10047 KRH10048 KRH10049 KRH10050	KRD00282 KRD00283 KRD00284 KRD00285	GRD-104-108	SMPR-1022
3000	208 240 277 480	60	1524	51.75	1315	KRH10022 KRH10023 KRH10024 KRH10025	KRH10051 KRH10052 KRH10053 KRH10054	KRD00286 KRD00287 KRD00288 KRD00289	GRD-104-109	SMPR-1023
3600	208 240 277 480	72	1829	63.75	1619	KRH10026 KRH10027 KRH10028 KRH10029	KRH10055 KRH10056 KRH10057 KRH10058	KRD00290 KRD00291 KRD00292 KRD00293	GRD-104-110	SMPR-1024

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

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

Wattage	Volts	Overall Length in	Overall Length mm	Heated Length in	Heated Length mm	Part Number without Guard	Part Number with Guard	Replacement Element Part Number	Replacement Protective Wire Guard	Replacement Reflector Set Part Number
1200	120 208 240 277	18	457	9.75	248	KRH20001 KRH20002 KRH20003 KRH20004	KRH20030 KRH20031 KRH20032 KRH20033	KRD00266 KRD00267 KRD00252 KRD00268	GRD-104-104	SMPR-1018
1800	120 208 240 277	24	610	15.75	401	KRH20005 KRH20006 KRH20007 KRH20008	KRH20034 KRH20035 KRH20036 KRH20037	KRD00269 KRD00270 KRD00271 KRD00272	GRD-104-105	SMPR-1019
2600	120 208 240 277 480	30	762	21.75	553	KRH20009 KRH20010 KRH20011 KRH20012 KRH20013	KRH20038 KRH20039 KRH20040 KRH20041 KRH20042	KRD00273 KRD00274 KRD00275 KRD00276 KRD00277	GRD-104-106	SMPR-1020
3200	208 240 277 480	36	914	27.75	705	KRH20014 KRH20015 KRH20016 KRH20017	KRH20043 KRH20044 KRH20045 KRH20046	KRD00278 KRD00279 KRD00280 KRD00281	GRD-104-107	SMPR-1021
4800	208 240 277 480	48	1219	39.75	1010	KRH20018 KRH20019 KRH20020 KRH20021	KRH20047 KRH20048 KRH20049 KRH20050	KRD00282 KRD00283 KRD00284 KRD00285	GRD-104-108	SMPR-1022
6000	208 240 277 480	60	1524	51.75	1315	KRH20022 KRH20023 KRH20024 KRH20025	KRH20051 KRH20052 KRH20053 KRH20054	KRD00286 KRD00287 KRD00288 KRD00289	GRD-104-109	SMPR-1023
7200	208 240 277 480	72	1829	63.75	1619	KRH20026 KRH20027 KRH20028 KRH20029	KRH20055 KRH20056 KRH20057 KRH20058	KRD00290 KRD00291 KRD00292 KRD00293	GRD-104-110	SMPR-1024

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.