

# Radiant Process Heaters



## Sealed IR Quartz Lamps

### Sealed IR Quartz Lamps



#### Design Features

- \* *Fast Filament Response*
- \* *High Power Densities possible — up to 200 watts per inch per filament*
- \* *Different filament temperatures available to suit different materials*
- \* *Optional white or gold reflective layer on lamps redirects heat towards target material*
- \* *Single or twin-tube construction*
- \* *Contour bending available*

#### Filament Temperature Ratings

Filament Type	Near Infrared (NIR)	Short Wave (SW)	Fast Response Medium Wave (FRMW) High Temperature	Fast Response Medium Wave (FRMW) Low Temperature
Filament Response	1 second	1 second	1-2 seconds	1-2 seconds
Filament Temperature	2900K/4800°F	2500K/4000°F	1900K/2900°F	1500K/2200°F
Approximate Peak Wavelength	1.0μm	1.2μm	1.6μm	2.0μm
Maximum watts/inch per Filament	200	200	100	100
Average Lifetime (Hours)	2000	5000	5000	5000

#### SPECIFICATIONS

**Max. Temperature:** 350°C — End Seal  
 900°C — Quartz Tube and optional White Ceramic Reflective Layer  
 800°C — Optional Gold Reflective Layer

**Max. Voltage:** 600 Volts depending on design

#### LAMP GLASS TYPES

**Clear:** Standard

**Ruby:** Reduces Glare

**Translucent:** Reduces Glare

**Frosted:** Reduces Glare

**Gold Reflector:** Redirects heat toward target for increased efficiency.

**White Reflector:** Redirects heat toward target for increased efficiency similar to gold, but will not degrade over time at high temperatures.



#### Custom Designs





# Radiant Process Heaters

## Sealed IR Quartz Lamps

### Lamp Terminations

Select the termination style that meets your requirements.

**Type R7s** Recessed Single Contact



Minimum Unheated Length



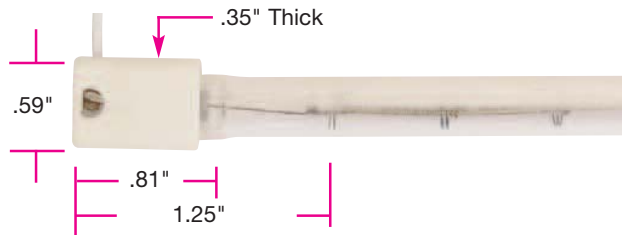
**Type R7W** R7S + Lead Wire



**Type F** Flat Ceramic + Lead Wire (No Cement)



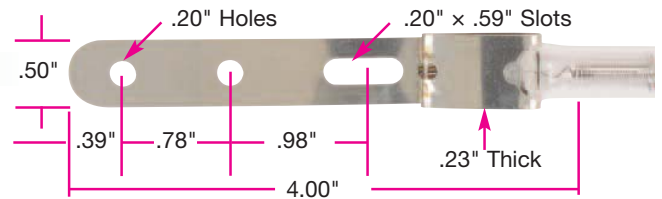
**Type FX** Flat Ceramic + Lead Wire (Fixed with Cement)



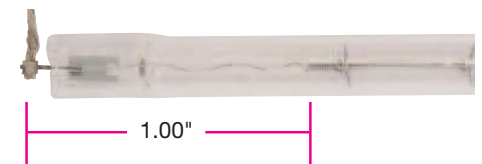
**TYPE U** Metal Clip + Lead Wire



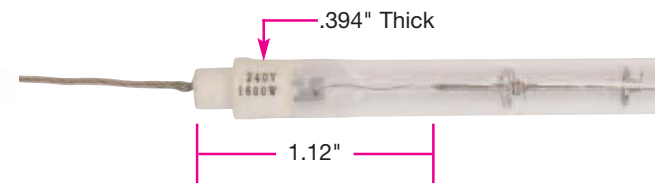
**Type X** Metal Tabs with Mounting Holes & Slots



**Type W** Lead Wire Only (Bare Wire Shown)



**Type RC** Round Ceramic



# Radiant Process Heaters



## Sealed IR Quartz Lamps

### Common Industry Standard (Non-Stock) Lamps

Filament color temperature is 2500K and lead wire terminations have 145 mm (5-11/16") of uninsulated wire unless otherwise noted.

Wattage	Voltage	Overall Length		Heated Length		Base Type	Burning	Glass Type	Special Notes	Part Number
		(in)	(mm)	(in)	(mm)					
300	120	8.46	215.0	4.17	106.0	U	V	Clear		LMP00001
300	120	8.43	214.0	4.17	106.0	U	H	Translucent		LMP00002
375	120	8.69	220.6	5.06	128.6	R7s	V	Clear		LMP00003
500	120	8.50	216.0	5.06	128.6	R7s	H	Frosted		LMP00004
500	120	8.66	220.0	5.00	127.0	R7s	H	Translucent		LMP00005
500	120	8.69	220.6	4.84	123.0	R7s	V	Clear		LMP00006
500	120	8.81	223.8	4.84	123.0	U	H	Clear		LMP00007
500	240	8.69	220.6	5.06	128.6	R7W	H	Clear		LMP00008
500	240	8.96	227.5	6.50	165.0	Fx	H	Clear	Teflon® Insulated Lead Wire (with #10 Spade Terminal)	LMP00009
1000	208	13.63	346.2	10.06	255.5	R7s	H	Clear		LMP00010
1000	240	11.93	303.0	10.00	254.0	U	V	Clear		LMP00011
1000	240	13.63	346.2	10.06	255.5	R7s	H	Clear		LMP00012
1000	240	13.81	350.8	10.00	254.0	U	V	Clear		LMP00013
1000	240	13.82	351.0	10.71	272.0	U	H	Translucent		LMP00014
1000	240	13.98	355.0	10.71	272.0	Fx	V	White Reflector	Teflon® Insulated Lead Wire (with #10 Spade Terminal)	LMP00015
1000	240	19.09	485.0	10.71	272.0	X	H	White Reflector		LMP00016
1000	277	13.63	346.2	10.06	255.5	R7s	H	Clear		LMP00017
1200	144	8.81	223.8	6.18	157.0	U	V	Clear		LMP00018
1200	240	18.07	459.0	15.20	386.0	R7s	V	Clear		LMP00019
1350	115	12.48	317.0	10.08	256.0	RC	H	Clear	2750K Color Temperature	LMP00020
1500	240	9.13	232.0	6.89	175.0	W	H	Clear	228 mm (9") Bare Lead Wire	LMP00021
1600	208	19.65	499.0	16.02	407.0	R7s	H	Translucent		LMP00022
1600	208	19.76	502.0	16.02	407.0	RC	H	Clear		LMP00023
1600	208	19.80	503.0	16.02	407.0	U	H	Translucent		LMP00024
1600	240	19.63	498.6	16.06	407.9	R7s	H	Clear		LMP00025
1600	240	19.80	503.0	16.02	407.0	U	H	Translucent		LMP00026
1600	240	19.81	503.2	15.75	400.0	U	V	Clear		LMP00027
1600	277	19.65	499.0	16.02	407.0	R7s	V	Clear		LMP00028
1600	277	19.81	503.2	16.02	407.0	U	V	Clear		LMP00029
2000	230	21.67	550.4	19.57	497.0	R7s	H	Clear		LMP00030
2000	240	13.78	350.0	11.73	298.0	R7s	H	Clear		LMP00031
2000	240	13.82	351.0	10.00	254.0	U	H	Clear		LMP00032
2000	240	13.74	349.0	11.02	280.0	W	V	Clear	#10 Ring Terminal	LMP00033
2000	240	13.86	352.0	11.50	292.0	W	H	Clear	228 mm (9") Bare Lead Wire	LMP00034
2000	240	13.94	354.0	11.42	290.0	Fx	H	White Reflector		LMP00035
2000	240	14.06	357.0	11.02	280.0	Fx	V	White Reflector	Teflon® Insulated Lead Wire (with #10 Spade Terminal)	LMP00036
2000	240	19.09	485.0	11.02	280.0	X	V	Clear		LMP00037
2000	400	24.53	623.0	16.14	410.0	X	V	Clear		LMP00038
2500	240	13.86	352.0	11.50	292.0	W	H	Clear	228 mm (9") Bare Lead Wire	LMP00039
2500	400	14.06	357.0	11.02	280.0	F	H	White Reflector	Teflon® Insulated Lead Wire (with #10 Spade Terminal)	LMP00040
2500	480	28.62	727.0	25.00	635.0	R7s	H	Translucent		LMP00041
2500	480	28.63	727.2	25.06	636.5	R7s	V	Clear		LMP00042
2500	480	28.78	731.0	25.00	635.0	RC	H	Clear		LMP00043
2500	480	28.81	731.8	24.87	631.8	U	V	Clear		LMP00044
2500	480	28.82	732.0	25.00	635.0	U	H	Translucent		LMP00045
2500	575	28.82	732.0	25.00	635.0	U	H	Clear		LMP00046
2500	600	28.78	731.0	25.00	635.0	RC	V	Clear		LMP00047
3000	400	35.94	913.0	27.56	700.0	X	H	Clear		LMP00048
3650	480	41.69	1059.0	37.99	965.0	U	V	Clear		LMP00049
3650	480	41.81	1062.0	37.72	958.0	RC	H	Clear		LMP00050
3800	570	41.81	1062.0	37.99	965.0	U	V	Clear		LMP00051
3800	570	41.81	1062.0	37.99	965.0	RC	V	Clear		LMP00052
3800	575	40.63	1032.0	37.06	941.3	R7s	H	Clear		LMP00053
4900	480	52.81	1341.3	49.02	1245.0	RC	V	Clear		LMP00054
5800	480	63.82	1621.0	60.00	1524.0	RC	V	Clear		LMP00055

#### Terminations Key

**F** — Flat ceramic (no cement)  
**Fx** — Flat ceramic (fixed with cement)

**U** — Metal sleeve + wire  
**X** — Metal tab w/holes & slot  
**R7s** — Recessed single contact

**R7W** — R7s w/lead wire  
**RC** — Round ceramic + lead wire  
**W** — Lead wire only - no base

#### Burning Positions Key

**H** — Horizontal use only  
**V** — Horizontal or vertical use

# Radiant Process Heaters



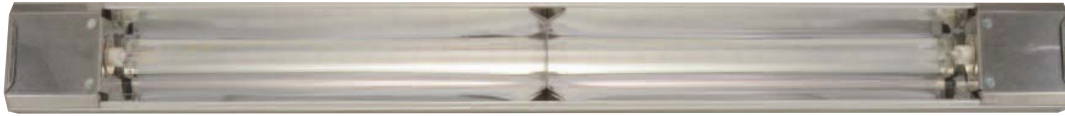
## QRH Quartz Lamp Radiant Heaters

### QRH Single Quartz Lamp Radiant Heater Assemblies

Designed for use in applications that require instant on/off response with rapid heat-up and cooldown rates. These heater assemblies are designed to operate in the short wavelength range of 2.5-1.2 microns (1600 to 4000°F peak emitter temperatures).

These Universal 2000 Modular Housing assemblies utilize T3 (10mm) LMP sealed lamps.

These rugged short wavelength units contain double ended lamps having quick connect RSC/R7s bases for easy lamp access without disassembly of housing or removing heater from installation. The Quartz IR heat lamps are mounted at the focal point of a polished aluminum reflector within the housing. These units are available in a variety of sizes and power combinations.



#### Design Features

- \* Direct Retrofit into existing NEMA 1 applications
- \* Rugged Universal 2000 anodized aluminum housing
- \* Wattage range of 375W to 3800W in standard designs
- \* 110-600V voltages available depending on heated length
- \* Power density range of 65-220 w/in available; contact Tempco
- \* RSC/R7s quick connect lamp terminations (8 amps maximum per lamp)
- \* Maximum lamp length 41 inches, minimum 8 inches
- \* Fast response, immediate on/off, 20-40 sec for full heat-up
- \* Full cooldown in less than 3-6 minutes
- \* Single end wiring option available
- \* Utilizes standard TRH removable guard designs
- \* Custom dual lamp units up to 48" OAL housing length are available

#### Installation Notes:

These units are for horizontal installation only.

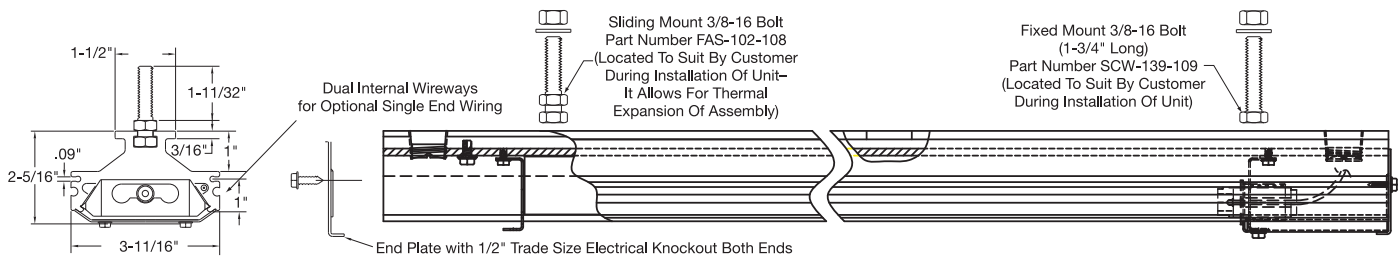
Lamp sockets are prewired in terminal enclosures with 16ga 600V rated conductors. Wires or connectors used for line connections inside junction boxes should be rated 200°C or higher, and sized per NEC/NFPA for unit voltage and amperage ratings.

Wiring used inside the internal wireways as crossover wiring must be rated 450°C or higher. Termination temperature at the exposed lamp cold ends must not exceed 650°F (343°C). Lamps should be shielded from direct visual observation due to their intense brightness when operating.

Initial inrush current will be 10 to 15 times the steady state current. Choose appropriate fuses for this heater assembly. Lamps should be operated within +/- 10% of rated voltage with minimal cycling to ensure long life. Operating outside this voltage range may cause internal degasification and discoloration of the lamp sheath, promoting premature element failure. When using copper wiring for field wiring, use only nickel plated or nickel clad conductors. Unplated or silver plated copper must not be used.

### Standard Design (Non-Stock) QRH1 Series Single T3 Lamp Double End RSC Termination

Wattage	Volts	Housing Overall Length		Lamp Heated Length		Lamp watts/inch	Part Number without Guard	Part Number with Guard	Replacement Lamp Part Number	Replacement Protective Wire Guard	Replacement Reflectors Part Number
		in	mm	in	mm						
375	115/120	16	406	5.06	128.5	74.0	QRH10001	QRH10010	LMP00003	GRD-104-125	SMPR-1111
500	115/120	16	406	5.06	128.5	98.8	QRH10002	QRH10011	LMP00006	GRD-104-125	SMPR-1111
1000	208	21	533	9.81	249.2	102.0	QRH10003	QRH10012	LMP00010	GRD-104-126	SMPR-1112
1000	220/240	21	533	9.81	249.2	102.0	QRH10004	QRH10013	LMP00012	GRD-104-126	SMPR-1112
1000	277	21	533	9.81	249.2	102.0	QRH10005	QRH10014	LMP00017	GRD-104-126	SMPR-1112
1600	220/240	27	686	16.00	406.4	100.0	QRH10006	QRH10015	LMP00025	GRD-104-127	SMPR-1113
1600	277	27	686	16.00	406.4	100.0	QRH10007	QRH10016	LMP00028	GRD-104-127	SMPR-1113
2500	460/480	36	914	25.06	636.5	99.8	QRH10008	QRH10017	LMP00042	GRD-104-107	SMPR-1122
3800	550/575	48	1219	37.00	939.8	102.7	QRH10009	QRH10018	LMP00053	GRD-104-108	SMPR-1123



**Danger: Hazard of Fire** Do not mount heater closer than 6" to any combustible or structural material that does not have at least a 200°C continuous temperature rating.

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.



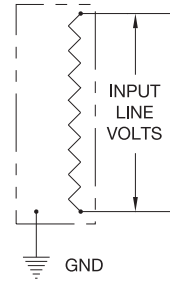
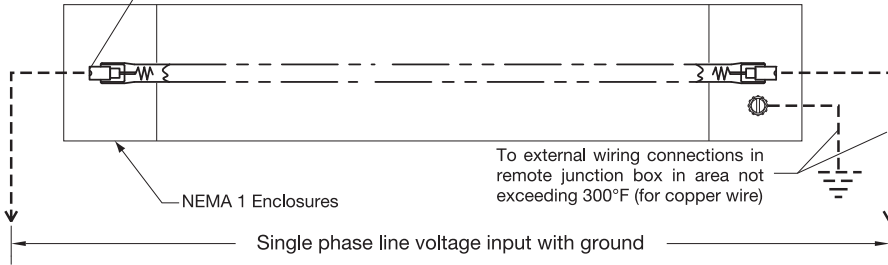
# Radiant Process Heaters

## QRH Quartz Lamp Radiant Heaters

### Standard Double-End Wiring

**NOTE:**  
Allow for element movement when wiring inside this end.

Attach properly rated line input wires to both element ends using the nickel-plated steel ring crimp connectors provided. Solid or stranded conductors can be used.



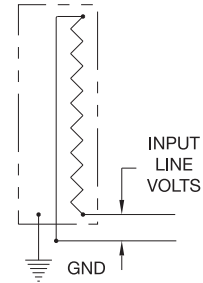
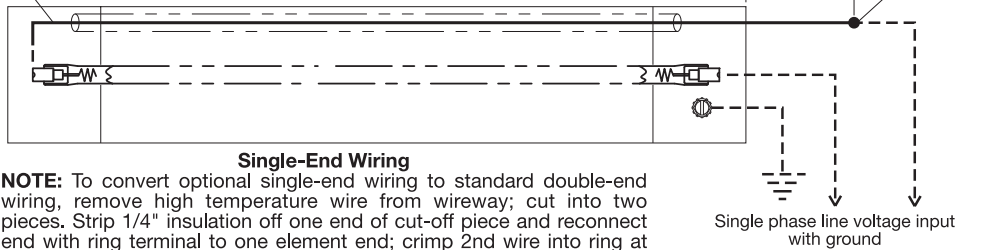
### Optional Single End-Wiring

Single return wire rated for 842°F (450°C), 600V is supplied in internal wireway for line input at ground lug end.

External wiring connection in remote junction box in area not exceeding 300°F (for copper wire)

**CAUTION:** Do not cut or connect to this wire inside QRH housing. For connection to field wiring within external junction box only.

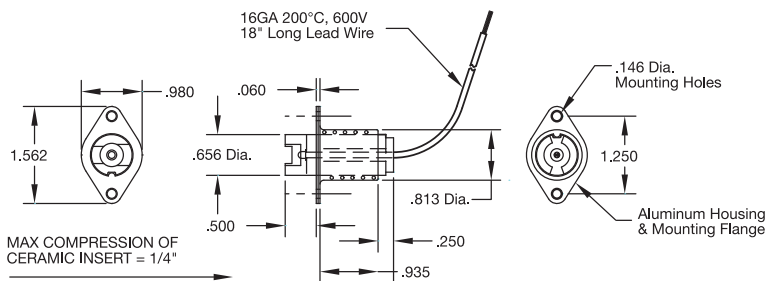
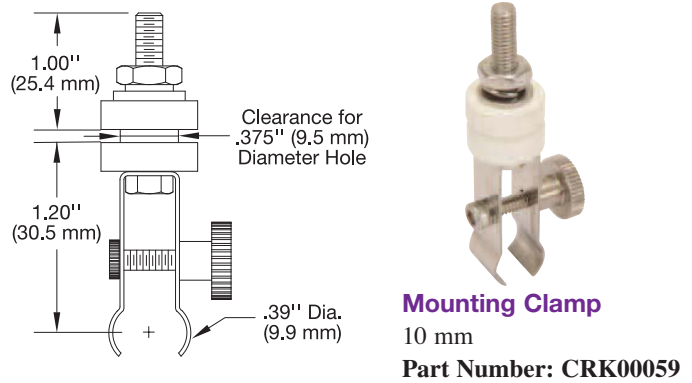
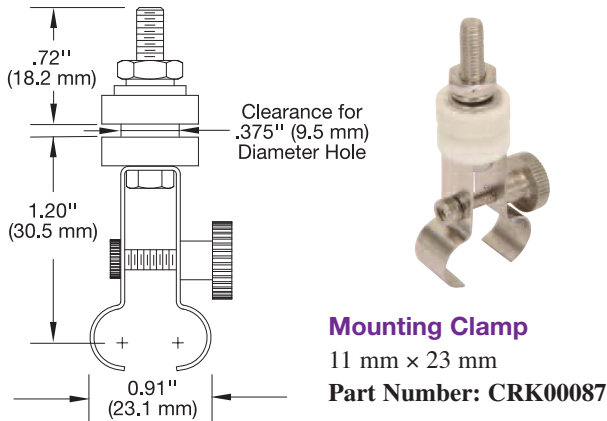
Wireway conductor extends 12" from unit



### Single-End Wiring

**NOTE:** To convert optional single-end wiring to standard double-end wiring, remove high temperature wire from wireway; cut into two pieces. Strip 1/4" insulation off one end of cut-off piece and reconnect end with ring terminal to one element end; crimp 2nd wire into ring at opposite element end.

### Lamp Accessories



### Wiring Options

Series QRH 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.