

# Radiant Process Heaters



## Series CRH, CRD E-Mitters

### Insulated Flat Face Short Neck Series CRH and Long Neck Series CRD Ceramic E-Mitters



CRH shown in white and CRD in metamorphing rose (cold) to grey (hot)

#### CRH and CRD E-Mitter Construction

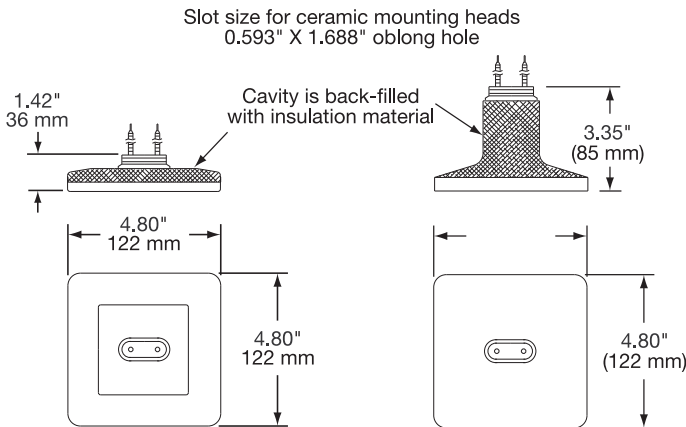
1. **LESS MASS.** A special manufacturing process allows construction with thin walls that withstand larger temperature gradients. The embedded resistance coils heat up the low mass body at a faster rate, providing considerable energy savings.
2. **SUPERIOR INSULATING MATERIAL.** The hollow inner area is filled with low-mass ceramic fiber to further insulate the contact region from the e-mitter surface, resulting in an improved operating life.

#### Design Features

- \* *Universal mount designed to be dropped into existing systems regardless of manufacturer*
- \* *Standard colors are metamorphing rose (cold) to grey (hot), and traditional white. Optional colors are metamorphing yellow (cold) to orange (hot), and black*
- \* *Standard stocked voltage: 120 or 220/240V as noted; other voltages are available*
- \* *Available with built-in type K thermocouple. Optional type J thermocouple is also available.*
- \* *Long operating life – over 10,000-plus hours of continuous operation under normal conditions*
- \* *Performance is unaffected by vibration or adverse atmospheric conditions*
- \* *2.5 to 6µm infrared radiation wavelength*

#### Optional Features

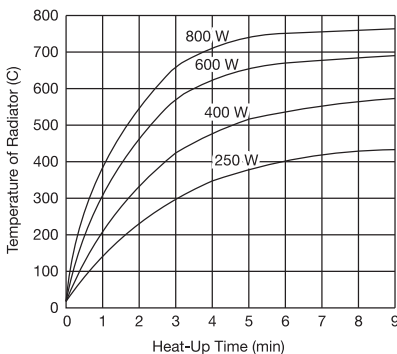
- \* *Additional Power or Thermocouple Lead Lengths (page 7-23)*
- \* *Two-Piece Wave Mounting Clip (page 7-14)*
- \* *Reflectors and Other Accessories (pages 7-20 through 7-23)*
- \* *Arrays and Power/Temperature Control Panels (start on page 7-15)*



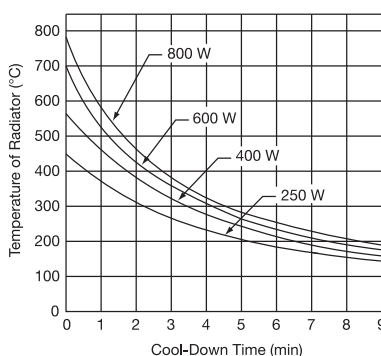
Series CRH Dimensions

Series CRD Dimensions

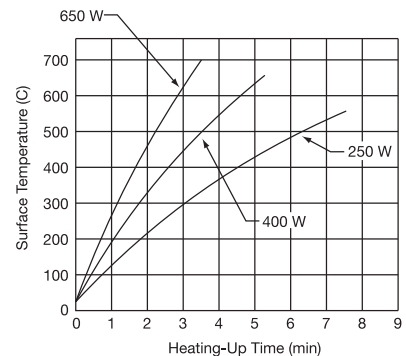
Warm-up Curve  
CRH Short Shaft



Cool-Down Curve  
CRH Short Shaft



Warm-up Curve  
CRD Long Shaft

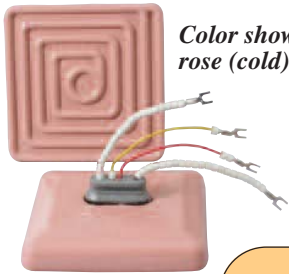




# Radiant Process Heaters

## Series CRH, CRD E-Mitters

### Series CRH E-Mitters – Size: 122 mm (4.80") square



Color shown is  
rose (cold) to grey (hot)

#### Optional Features

- \* Additional Power or Thermocouple Lead Lengths (page 7-23)
- \* Two-Piece Wave Mounting Clip (page 7-14)
- \* Reflectors and Other Accessories (pages 7-20 through 7-23)
- \* Arrays and Power/Temperature Control Panels (start on page 7-15)

#### Standard (Non-Stock) CRH E-Mitters

E-Mitters listed have 3.50" ceramic bead insulated leads, #8-10 spade terminals, and a one-piece spring clip for mounting.

Wattage	Voltage	Color	Watt Density*		Heater Body Temp.**		Part Number	
			(W/in <sup>2</sup> )	(W/cm <sup>2</sup> )	(Typical Operating) °F	°C	Without Thermocouple	With Type K Thermocouple
250	220/240	Rose to Grey	10.84	1.68	757	403	CRH10029	CRH10030
250	220/240	White	10.84	1.68	757	403	CRH00029	CRH00030
400	220/240	Rose to Grey	17.34	2.69	943	506	CRH10018	CRH10005
400	220/240	White	17.34	2.69	943	506	CRH00018	CRH00005
600	220/240	Rose to Grey	26.01	4.03	1117	603	CRH10010	CRH10011
600	220/240	White	26.01	4.03	1117	603	CRH00010	CRH00011
800	220/240	Rose to Grey	34.68	5.38	1286	697	CRH10001	CRH10019
800	220/240	White	34.68	5.38	1286	697	CRH00001	CRH00019

### Series CRD E-Mitters – Size: 122 mm (4.80") square



Color shown is  
rose (cold) to grey (hot)

#### Optional Features

- \* Additional Power or Thermocouple Lead Lengths (page 7-23)
- \* Two-Piece Wave Mounting Clip (page 7-14)
- \* Reflectors and Other Accessories (pages 7-20 through 7-23)
- \* Arrays and Power/Temperature Control Panels (start on page 7-15)

#### Standard (Non-Stock) CRD E-Mitters

E-Mitters listed have 3.50" ceramic bead insulated leads, #8-10 spade terminals, and a one-piece spring clip for mounting.

Wattage	Voltage	Color	Watt Density*		Heater Body Temp.**		Part Number	
			(W/in <sup>2</sup> )	(W/cm <sup>2</sup> )	(Typical Operating) °F	°C	Without Thermocouple	With Type K Thermocouple
250	220/240	Rose to Grey	10.84	1.68	757	403	CRD10001	CRD10005
250	220/240	White	10.84	1.68	757	403	CRD00001	CRD00005
400	220/240	Rose to Grey	17.34	2.69	943	506	CRD10002	CRD10006
400	220/240	White	17.34	2.69	943	506	CRD00002	CRD00006
650	220/240	Rose to Grey	28.18	4.37	1158	626	CRD10004	CRD10008
650	220/240	White	28.18	4.37	1158	626	CRD00004	CRD00008

\* **Watt density** calculated using heater face surface area.

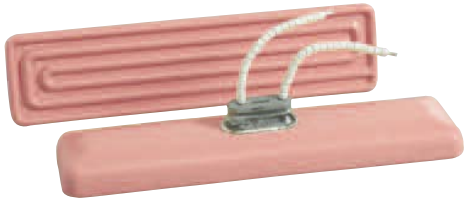
\*\* **E-Mitter heater body temperature** as measured with internal thermocouple when mounted facedown in stock CRK reflector and operating in 72°F (22°C) room ambient.

## Radiant Process Heaters



CRN, CRZ E-Mitters

### Insulated Flat Face Short Neck Series CRN and CRZ Ceramic E-Mitters

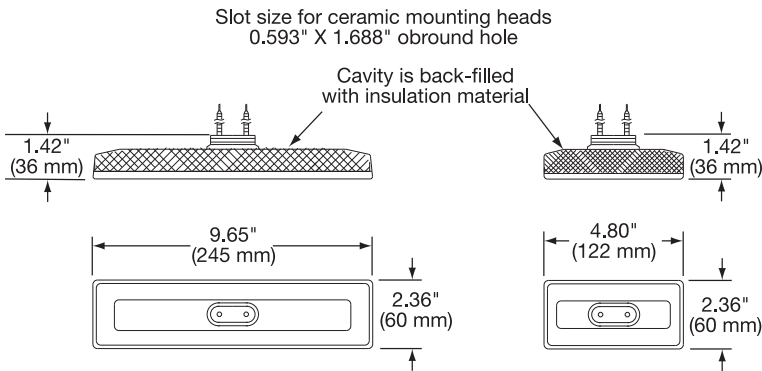


#### Design Features

- \* Universal mount designed to be dropped into existing systems regardless of manufacturer.
- \* Standard colors are metamorphing rose (cold) to grey (hot), and traditional white. Optional colors are metamorphing yellow (cold) to orange (hot), and black.
- \* Standard stocked voltage: 120 or 220/240V as noted; other voltages are available.
- \* Available with built-in type K thermocouple. Optional type J thermocouple is also available.
- \* Long operating life—over 10,000-plus hours of continuous operation under normal conditions
- \* Performance is unaffected under adverse atmospheric conditions.
- \* 2.5 to 6 $\mu$ m infrared radiation wavelength

#### Series CRN Dimensions

#### Series CRZ Dimensions



#### CRN and CRZ E-Mitter Construction

1. **LESS MASS.** A special manufacturing process allows construction with thin walls that withstand larger temperature gradients. The embedded resistance coils heat up the low mass body at a faster rate, providing energy savings.
2. **SUPERIOR INSULATING MATERIAL.** The hollow inner area is filled with low-mass ceramic fiber to further insulate the contact region from the e-mitter surface, resulting in an improved operating life.



## Radiant Process Heaters

Stock CRN, CRZ E-Mitters

### CRN E-Mitters – Size: 60 mm × 245 mm (2.36" × 9.65")



#### Optional Features

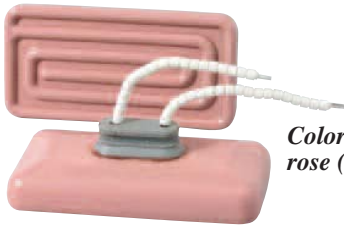
- \* *Additional Power or Thermocouple Lead Lengths (page 7-23)*
- \* *Two-Piece Wave Mounting Clip (page 7-14)*
- \* *Reflectors and Other Accessories (pages 7-20 through 7-23)*
- \* *Arrays and Power/Temperature Control Panels (start on page 7-15)*

#### Standard (Non-Stock) CRN E-Mitters

E-Mitters listed have 3.50" ceramic bead insulated leads, #8-10 spade terminals, and a one-piece spring clip for mounting.

Wattage	Voltage	Color	Watt Density*		Heater Body Temp.**		Part Number	
			(W/in <sup>2</sup> )	(W/cm <sup>2</sup> )	°F	°C	Without Thermocouple	With Type K Thermocouple
250	220/240	Rose to Grey	10.97	1.70	762	406	CRN10001	CRN10005
250	220/240	White	10.97	1.70	762	406	CRN00001	CRN00005
400	220/240	Rose to Grey	17.56	2.72	948	509	CRN10002	CRN10006
400	220/240	White	17.56	2.72	948	509	CRN00002	CRN00006
600	220/240	Rose to Grey	26.33	4.08	1123	606	CRN10003	CRN10007
600	220/240	White	26.33	4.08	1123	606	CRN00003	CRN00007
800	220/240	Rose to Grey	35.11	5.44	1294	701	CRN10004	CRN10008
800	220/240	White	35.11	5.44	1294	701	CRN00004	CRN00008

### CRZ E-Mitters – Size: 60 mm × 122 mm (2.36" × 4.80")



Color shown is rose (cold) to grey (hot)

#### Optional Features

- \* *Additional Power or Thermocouple Lead Lengths (page 7-23)*
- \* *Two-Piece Wave Mounting Clip (page 7-14)*
- \* *Reflectors and Other Accessories (pages 7-20 through 7-23)*
- \* *Arrays and Power/Temperature Control Panels (start on page 7-15)*

#### Standard (Non-Stock) CRZ E-Mitters

E-Mitters listed have 3.50" ceramic bead insulated leads, #8-10 spade terminals, and a one-piece spring clip for mounting.

Wattage	Voltage	Color	Watt Density*		Heater Body Temp.**		Part Number	
			(W/in <sup>2</sup> )	(W/cm <sup>2</sup> )	°F	°C	Without Thermocouple	With Type K Thermocouple
125	220/240	Rose to Grey	10.93	1.69	761	405	CRZ10001	CRZ10005
125	220/240	White	10.93	1.69	761	405	CRZ00001	CRZ00005
200	220/240	Rose to Grey	17.48	2.71	947	508	CRZ10002	CRZ10006
200	220/240	White	17.48	2.71	947	508	CRZ00002	CRZ00006
300	220/240	Rose to Grey	26.23	4.07	1121	605	CRZ10003	CRZ10007
300	220/240	White	26.23	4.07	1121	605	CRZ00003	CRZ00007
400	220/240	Rose to Grey	34.97	5.42	1291	699	CRZ10004	CRZ10008
400	220/240	White	34.97	5.42	1291	699	CRZ00004	CRZ00008
400	480	White	34.97	5.42	1291	699	CRZ00013	CRZ00014

\* **Watt density** calculated using heater face surface area.

\*\* **E-Mitter heater body temperature** as measured with internal thermocouple when mounted facedown in stock CRK reflector and operating in 72°F (22°C) room ambient.

# Radiant Process Heaters



## Stock E-Mitter Accessories

### Mounting Accessories and Low Noise Thermocouple Option

#### One-Piece Mounting Clip (Standard)

Designed for heater mounting with 22 ga (.028") to 20 ga (.037") sheet metal.

**Part Number SPR-103-102**

Thinner or thicker materials require the Two-Piece Mounting Clip.



Standard mounting spring clip shipped with heaters



#### Two-Piece Wave Mounting Clip (Optional)

The two-piece wave spring clip and holding clip assembly is used for mounting heaters in materials thicker than 20 ga (.037") or thinner than 22 ga (.028")

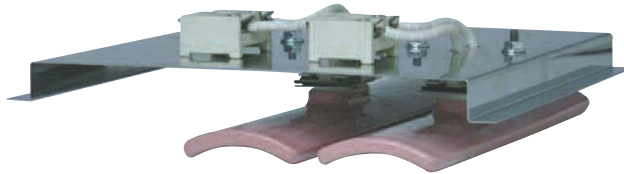
**Part Number: CRK00008**

*All Items Available from Stock*

#### Single Element Mounting Bracket

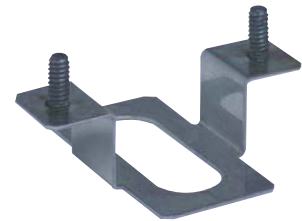
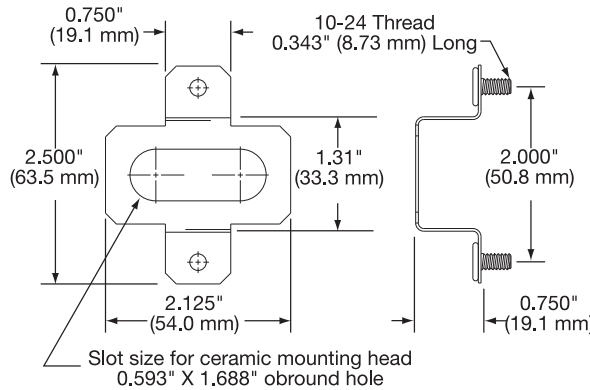
A convenient method for mounting individual E-Mitters to a flat surface or panel for spot heating applications

**Part Number: CRK00018**



The picture shows how the single element mounting bracket can be used to develop a panel array using Series CRB or CRC Ceramic E-Mitters or others with the same mounting head design.

High Temperature Ceramic Terminal Blocks (Part Number EHD-108-101) are used to connect power to the heater leads and can also be used for making thermocouple connections.



**Part Number: CRK00018**

#### Low Noise Thermocouple Option

Generally the standard thermocouple is acceptable for the majority of applications. Most instrumentation inputs have noise rejection sufficient to filter out unwanted 60 hz AC noise that the thermocouple picks up from being mounted close to the coil element for ideal temperature sensing.

For those applications where emf generated noise is a problem for the instrument, Tempco offers a low noise thermocouple solution. The low noise thermocouple option is designed to minimize the induced AC noise by using stainless steel overbraid on the high temperature fiberglass color-coded 24 GA solid leads as a ground shield and a ceramic insulator at the thermocouple junction.



Designed for use in the CRB, CRC, CRL, CRG and CRM solid curved and flat face style heaters. Low noise thermocouples can only be factory installed and must be specified at time of ordering.

Thermocouple Type	Termination	Lead Length (in)
K	Straight Pigtails	8
K	Straight Pigtails	12
K	Straight Pigtails	24
K	Straight Pigtails	48
J	Straight Pigtails	12
J	Straight Pigtails	48