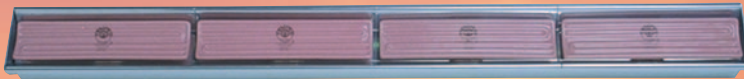


# Infrared Radiant Heating Array Systems

## Modular Components Simplify Construction of Large Infrared Heating Systems

***CRA Linear Array for Ceramic E-Mitters (page 7-16)***



***CRA Linear Array for KTE and KTG E-Mitters (page 7-47)***



***QRH Quartz — Universal 2000 Housing (page 7-56)***



***CRA Linear Array for Gemini Medium Wave (page 7-68)***



***KRH Quartz — Universal 2000 Housing (page 7-72)***



***Series TRH — Tubular Element in Universal 2000 Housing (page 7-74)***



***Type ARA Array for Ceramic E-Mitters (page 7-28)***



***Type ARV Array for KTE & KTG E-Mitters (page 7-48)***



***Type ARG Gemini Medium Wave Arrays (page 7-69)***



***Type ARK Quartz Tube Arrays (page 7-70)***



***Type ARC Channel Strip Heater Arrays (page 8-10)***



***Type ART Tubular Heater Arrays (page 10-17)***



**TEMPCO** will design & manufacture a panel array system, including a power and temperature control panel that meets your needs.

# Radiant Process Heaters

## CRA Linear Housings



### CRA Linear Heater Assemblies



#### Design Features

- \* 220/240V CRB or CRC E-Mitters
- \* Extruded aluminum housing
- \* E-Mitters pre-wired to terminal blocks
- \* METAMORPHING Rose to Grey colored E-Mitters
- \* Reflectors
- \* Fully assembled, ready to install, with mounting hardware
- \* 1/2" trade size wiring entrance at both ends
- \* 40" 1000 Watt CRA10025 shown above

#### Standard (Non-Stock) and Stock Sizes and Electrical Ratings

Assemblies with a Thermocouple have One E-Mitter with a Built-In Type K Thermocouple.

**Stock Items Are Shown In RED**

Nominal Housing Length	Total Assembly Wattage	E-Mitter Wattage	Number of E-Mitters	Part Number Assembly with no T/C	Part Number Assembly with K T/C	Replacement E-Mitters with no T/C	Replacement E-Mitters with K T/C
10"	250	250	1	CRA10001	CRA10048	CRB10006	CRB10008
	400	400	1	CRA10002	CRA10049	CRB10014	CRB10016
	650	650	1	CRA10003	CRA10050	CRB10023	CRB10025
	1000	1000	1	CRA10004	CRA10051	CRB10031	CRB10033
	250	125	2	CRA10005	CRA10052	CRC10005	CRC10007
	400	200	2	CRA10006	CRA10053	CRC10013	CRC10015
	650	325	2	CRA10007	CRA10054	CRC10021	CRC10023
	1000	500	2	CRA10008	CRA10055	CRC10027	CRC10029
20"	500	250	2	CRA10009	CRA10056	CRB10006	CRB10008
	800	400	2	CRA10010	CRA10057	CRB10014	CRB10016
	1300	650	2	CRA10011	CRA10058	CRB10023	CRB10025
	2000	1000	2	CRA10012	CRA10059	CRB10031	CRB10033
	500	125	4	CRA10013	CRA10060	CRC10005	CRC10007
	800	200	4	CRA10014	CRA10061	CRC10013	CRC10015
	1300	325	4	CRA10015	CRA10062	CRC10021	CRC10023
	2000	500	4	CRA10016	CRA10063	CRC10027	CRC10029
30"	750	250	3	CRA10017	CRA10064	CRB10006	CRB10008
	1200	400	3	CRA10018	CRA10065	CRB10014	CRB10016
	1950	650	3	CRA10019	CRA10066	CRB10023	CRB10025
	3000	1000	3	CRA10020	CRA10046	CRB10031	CRB10033
	750	125	6	CRA10021	CRA10067	CRC10005	CRC10007
	1200	200	6	CRA10022	CRA10068	CRC10013	CRC10015
	1950	325	6	CRA10023	CRA10069	CRC10021	CRC10023
	3000	500	6	CRA10024	CRA10070	CRC10027	CRC10029
40"	1000	250	4	CRA10025	CRA10071	CRB10006	CRB10008
	1600	400	4	CRA10026	CRA10072	CRB10014	CRB10016
	2600	650	4	CRA10027	CRA10073	CRB10023	CRB10025
	4000	1000	4	CRA10028	CRA10047	CRB10031	CRB10033
	1000	125	8	CRA10029	CRA10074	CRC10005	CRC10007
	1600	200	8	CRA10030	CRA10075	CRC10013	CRC10015
	2600	325	8	CRA10031	CRA10076	CRC10021	CRC10023
	4000	500	8	CRA10032	CRA10077	CRC10027	CRC10029
50"	1250	250	5	CRA10131	CRA10118	CRB10006	CRB10008
	2000	400	5	CRA10255	CRA10301	CRB10014	CRB10016
	3250	650	5	CRA10226	CRA10103	CRB10023	CRB10025
	5000	1000	5	CRA10152	CRA10302	CRB10031	CRB10033

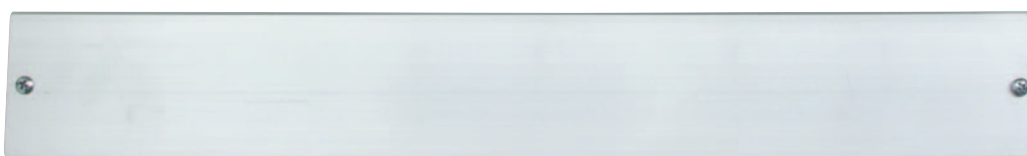


**DANGER: Hazard of Fire.** These heaters are not for use in atmospheres where flammable vapors, gases or liquids are present as defined in the National Electrical Code. Where solvents, water, etc. are being evaporated from the process it is necessary to provide substantial quantities of ventilating air to carry away all resulting vapors.

**WARNING: Hazard of Electric Shock.** Installation must be grounded to earth to avoid shock hazard. Disconnect power to installation before servicing or installing heater.

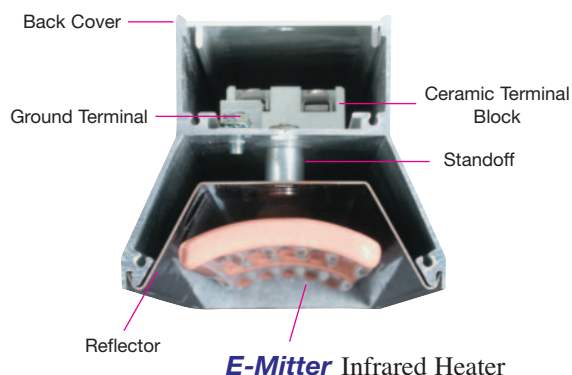
**WARNING: Do not use Copper Wire** to make connections inside this heater. High temperatures will oxidize copper. Use of nickel plated or nickel clad insulated copper wire is recommended. Wire insulation rating must be suitable for the ambient temperature of the wiring installation.

### CRA Linear Heater Assemblies — Construction



#### Easiest Replacement of Heaters in the Industry

E-Mitters are easily replaced by removing the top cover. Wiring entrance side covers are not affected. The heater lead wires are insulated with ceramic beads and connected to ceramic terminal blocks. Heaters can be wired to function individually or grouped into heating zones.



#### Design Features

- ★ Designed for use with E-Mitters CRB, CRC, CRN and CRZ
- ★ Lightweight extruded aluminum housing with 5/16-18 mounting bolts for use up to 250°C (482°F) extrusion temperature
- ★ E-Mitters are easily replaced by removing the top cover
- ★ Internal mounting hole pattern simplifies mixing and matching E-Mitter sizes and ratings
- ★ Space between reflector and housing wall offers a good thermal barrier to protect the wiring area
- ★ This CRA structural housing can be used with any manufacturer's standard 60 × 245 mm -or- 60 × 122 mm heaters
- ★ Wiring entrance 7/8" Diameter at both ends, for 1/2" trade size electrical fittings

#### Wiring Options

##### Prewired with Plain Leads, Armor Cable or Wire Braid (includes ground wire)

**Stainless steel armor cable** — 18" armor cable over 24" leads

**Galvanized armor cable** — 18" armor cable over 24" leads

**Stainless steel wire braid** — 18" wire braid over 24" leads

**Fiberglass leads (450°C rating)** — 12" long plain leads

If longer leads and/or longer armor cable are required, specify when ordering.

##### Prewired with 24" SJO Cable (includes ground wire)

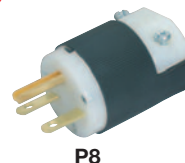
- 16 ga. cable (Up to 15 Amps)
- 14 ga. cable (Up to 22 Amps Max.)
- 12 ga. cable (Up to 28 Amps Max.)
- Max. terminal box temperature 194°F (90°C)
- If longer cable is required, specify when ordering.

#### Stock Heavy Duty Quick Disconnect Plugs and Connectors

Reference	NEMA P or R	Max. Amps	Volts	Plug Part Number	Connectors (Female) Part Number
P8 straight	6-15	15A	250V	EHD-102-114	EHD-103-139
P3 straight	5-15	15A	125V	EHD-102-103	EHD-103-102
P4 twist lock	L5-15	15A	125V	EHD-102-113	EHD-103-104
P5 twist lock	L6-15	15A	250V	EHD-102-121	EHD-103-107



**Optional Electrical Plugs** listed can be attached to armor cable, HPN cord or plain leads described under wiring Options. Connectors listed are cable mount matching units for the plugs listed and are ordered separately. See page 15-15 for additional plugs and connectors.







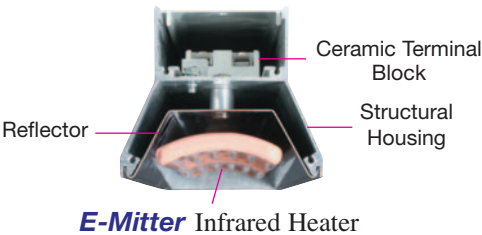
### Custom CRA Linear Heater Assemblies Using Standard Components

Do It Yourself or let Tempco build an array to your exact specifications using standard components.

Consult Tempco for arrays using custom designed components.



### Components Required To Build A Custom CRA Linear Heater using Standard Items



#### Example

#### Steps to Design a Custom CRA E-Mitter Linear Assembly from Standard Components

Designing a 40-inch-long CRA assembly using a stock housing length.

**Step 1) Select the Housing.** This application can use the standard CRK00004 housing from the Standard CRK Housing Lengths Table on page 7-19. Note the Maximum Power Rating of the housing when making your selection.

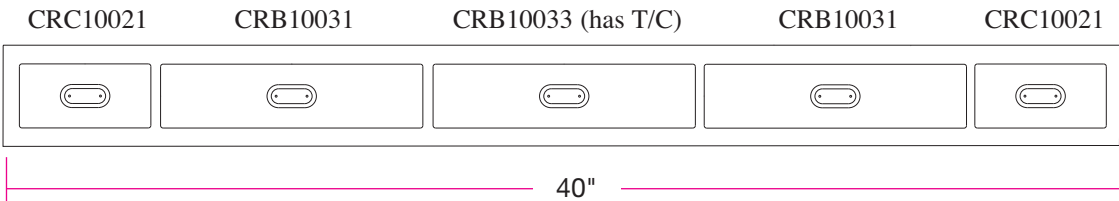
**Step 2) Select the E-Mitters Series.** The CRK Housing Lengths Table gives the various possible E-Mitter configurations that will fit the housing selected. A combination of CRBs and CRCs will be used for this application. CRB E-Mitters were selected for the inside three heaters to limit the number of unheated gaps that would be present if all CRC E-Mitters were used. The middle CRB E-Mitter has a thermocouple for temperature control. The outer two heaters *in this example* are CRC E-Mitters at a different w/in<sup>2</sup> than the CRBs because the heat required at the edges is not the same as the center. The heater color selected is Metamorphing Rose.

CRB E-Mitters can be found on page 7-4.

CRC E-Mitters can be found on page 7-7.

**Step 3) Select the Reflectors.** Select E-Mitter Reflectors to match the Style and Quantity of E-Mitters you selected. Three Part Number CRK00007 Reflectors are required for the CRB E-Mitters and Two Part Number CRK00006 Reflectors are required for the CRC E-Mitters. Note: Reflectors are complete with mounting hardware to attach to housing (page 7-20).

**Step 4) Select the Terminal Blocks.** Select the number of terminal blocks required for wiring. This would typically be one for each heater for the power leads and one for each thermocouple (page 7-21 and 7-22). A total of six terminal Blocks, Part Number EHD-108-101, are required. One for the power leads of each E-Mitter and one for the thermocouple on CRB10033.

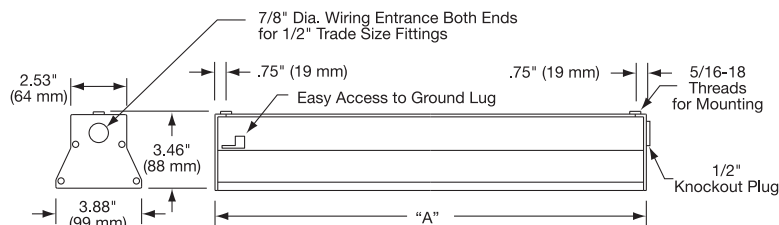


**View Product Inventory @ [www.tempco.com](http://www.tempco.com)**

### Standard CRK Linear Housings

CRK housings include the following components: housing body, end plates, 5/16-18 mounting bolts, cover and ground lug.

**NOTE:** These housings do not include the reflectors needed for mounting the heaters (see page 7-20) or the terminal block (Part Number EHD-108-101) required for wiring each heater (see page 7-21).



### Standard (Non-Stock) Housing Lengths Table

Nominal Housing Length in	"A" Dim. in mm	Housing Part Number	Examples of Possible E-Mitter Configurations	Maximum Power
5	5.19 131.8	CRK00024	1 CRC or 1 CRZ	.5KW
10	10.13 257.2	CRK00001	1 CRB or 1 CRN, 2 CRCs or 2 CRZs	1KW
15	15.06 382.6	CRK00023	3 CRCs or 3 CRZs (1 CRB and 1 CRC) or (1 CRN and 1 CRZ)	1.5KW
20	20.00 508.0	CRK00002	2 CRBs or 2 CRNs, 4 CRCs or 4 CRZs (1 CRB and 2 CRCs) or (1 CRN and 2 CRZs)	2KW
25	24.94 633.4	CRK00022	5 CRCs or 5 CRZs a combination of (CRBs and CRCs) or (CRNs and CRZs)	2.5KW
30	29.88 758.8	CRK00003	3 CRBs or 3 CRNs, 6 CRCs or 6 CRZs a combination of (CRBs and CRCs) or (CRNs and CRZs)	3KW
35	34.81 884.2	CRK00019	7 CRCs or 7 CRZs a combination of (CRBs and CRCs) or (CRNs and CRZs)	3.5KW
40	39.75 1009.7	CRK00004	4 CRBs or 4 CRNs, 8 CRCs or 8 CRZs a combination of (CRBs and CRCs) or (CRNs and CRZs)	4KW
50	49.63 1260.5	CRK00021	5 CRBs or 5 CRNs, 10 CRCs or 10 CRZs a combination of (CRBs and CRCs) or (CRNs and CRZs)	5KW
60	59.50 1511.3	CRK00027	6 CRBs or 6 CRNs, 12 CRCs or 12 CRZs a combination of (CRBs and CRCs) or (CRNs and CRZs)	6KW
70	69.38 1762.1	CRK00029	7 CRBs or 7 CRNs, 14 CRCs or 14 CRZs a combination of (CRBs and CRCs) or (CRNs and CRZs)	7KW

Standard housings are available from as-assembled stock in 10", 20", 30", 40" and 50" lengths. Other housing lengths can be made to your requirements.

### Ordering Information

#### Custom Engineered/Manufactured CRA Heater Assembly

#### Standard Assemblies

Order by Part Number on page 7-16. Delivery is Stock to 3 days.

Understanding that a CRA linear structural housing can be very application specific, **TEMPCO** will design and manufacture a CRA heater assembly to meet your requirements. **Standard lead time is 3 weeks.**

**Please Specify** the following:

- ☐ Housing Length
- ☐ E-Mitter Color
- ☐ E-Mitter Size, Electrical Ratings or Part Number
- ☐ E-Mitter with Built-In Type K T/C, Size, Electrical Ratings or Part Number



If you should encounter any problems or need technical support in the design of the CRA system consult Tempco. Our team of professionals will provide you with the right solution for your application.

**WARNING:** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

# Radiant Process Heaters

## CRA Linear Heater Components

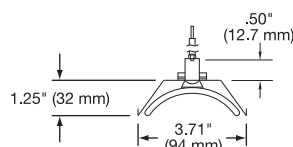
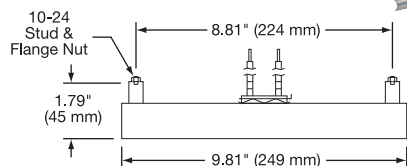


### Stock Reflectors for CRB, CRN, CRC, CRZ and CRL E-Mitters



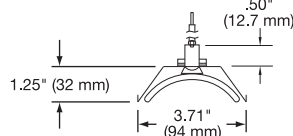
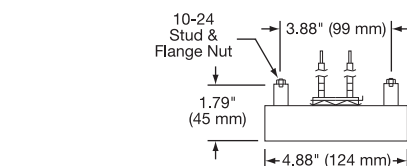
#### Reflectors for Ceramic E-Mitters

- ★ Designed to withstand bending and heat distortion.
- ★ Made from highly polished chrome steel or optional aluminized steel for extreme temperatures and harsh environments.
- ★ Will withstand high operating temperatures.
- ★ Available in three standard sizes; includes standoffs and hardware.
- ★ Easy installation into CRA linear structural housing assemblies (except CRK00032).



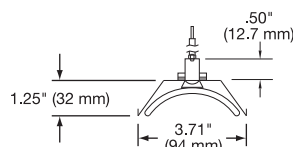
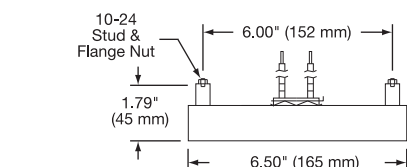
#### For One CRB E-Mitter or One CRN E-Mitter

Part Number: CRK00007 (Chrome Steel)  
Part Number: CRK00049 (Aluminized Steel)



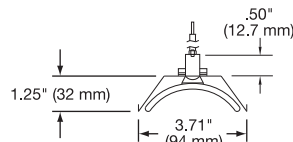
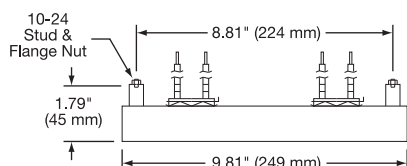
#### For One CRC E-Mitter or One CRZ E-Mitter

Part Number: CRK00006 (Chrome Steel)  
Part Number: CRK00035 (Aluminized Steel)



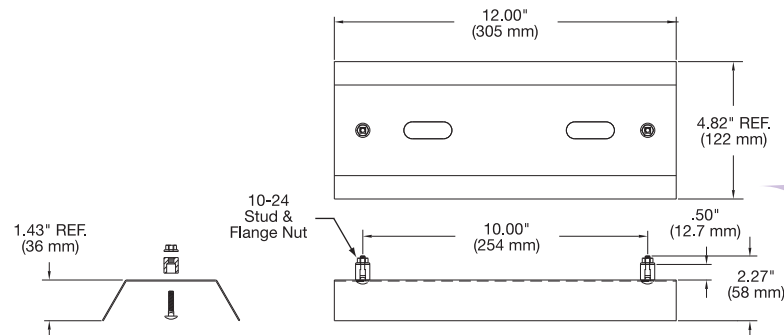
#### For One CRM E-Mitter

Part Number: CRK00030 (Chrome Steel)  
Part Number: CRK00074 (Aluminized Steel)



#### For Two CRC E-Mitters or Two CRZ E-Mitters

Part Number: CRK00020 (Chrome Steel)  
Part Number: CRK00043 (Aluminized Steel)



#### For One CRL E-Mitter

Part Number: CRK00032 (Aluminized Steel)



**Note:** Reflectors in drawings are shown with curved heater(s) for reference only.

*All Items Available from Stock*

### Ceramic Twist-Loc Wire Connectors

Porcelain Material, Maximum Temperature Rating 1200°F (645°C), 300V Maximum, EHD-114-102, EHD-114-103 and EHD-114-104 are UL Recognized (File E9809) and CSA Certified.

Part Number	Wire Range (Solid or Stranded Wire)		Skirt Length	Opening ID	Outer Diameter
EHD-114-102	2#22	1#18 + 1#16	.687"	.250"	.406"
EHD-114-103	2#20	2#16	.750"	.312"	.484"
EHD-114-104	2#18	2#14	.843"	.406"	.531"
EHD-114-105	1#16 + 1#14	1#14 + 2#12	1.00"	.468"	.703"

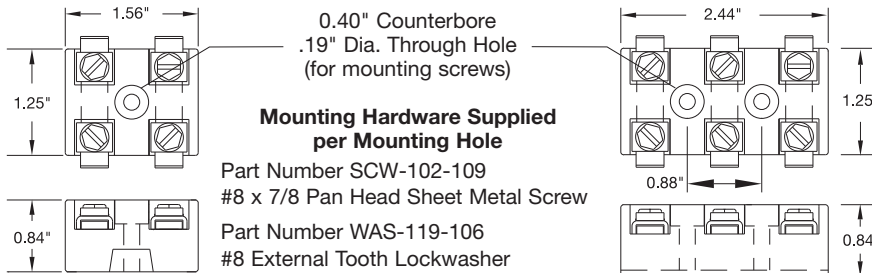


### Standard Ceramic Terminal Blocks for Internal Wiring

Used for internal connections within CRA linear structural housings and ARA arrays.

#### Design Features

- \* **Maximum Voltage:** 600 VAC
- \* **Maximum Temperature:** 450°C/842°F
- \* **Hardware:** Stainless Steel
- \* **Body Material:** Steatite
- \* **Maximum Current:** 20 Amps
- \* **AWG:** 20-12 ga. wire
- \* **Terminals:** #8 Screw



**Part Number:**  
EHD-108-101



**Part Number:**  
EHD-108-121

### Ceramic Terminal Blocks (Enclosed Terminals)

Used for wiring of heater power and thermocouple wiring in high temperature locations.

#### Design Features

- \* **Maximum Voltage:** 380 VAC
- \* **Maximum Temperature:** 240°C/464°F
- \* **Screw:** M3, zinc plated steel
- \* **Body Material:** Porcelain
- \* **Maximum Current:** 30 Amps
- \* **AWG:** 26-12 stranded, 26-14 solid
- \* **Terminal Body:** Nickel plated brass
- \* **Rating:** CE, VDE



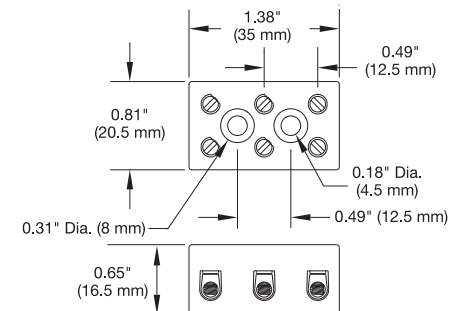
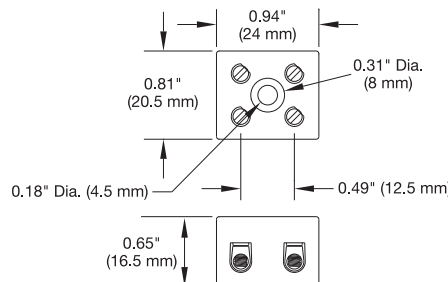
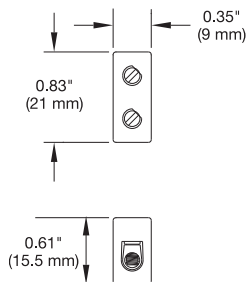
**Part Number:**  
EHD-108-116



**Part Number:**  
EHD-108-117

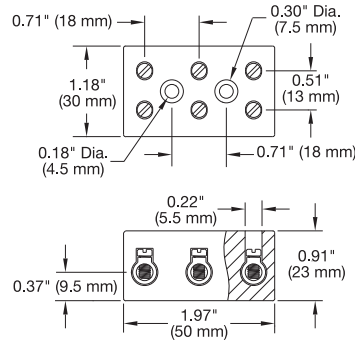
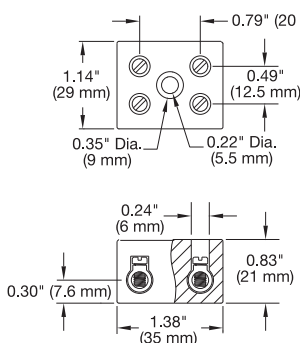


**Part Number:**  
EHD-108-118



#### Design Features

- \* **Maximum Voltage:** 600 VAC
- \* **Maximum Temperature:** 200°C/392°F
- \* **Screw:** M4, zinc plated steel
- \* **Body Material:** Porcelain
- \* **Maximum Current:** 50 Amps
- \* **AWG:** 14-8 ga wire
- \* **Terminal Body:** Nickel plated brass
- \* **Rating:** UL File #E69841



**Part Number:** EHD-108-114



**Part Number:** EHD-108-115

**CONTINUED**

# Radiant Process Heaters



## Stock Ceramic Terminal Blocks

### Heavy Duty High Temperature Ceramic Line Wiring Blocks (Exposed Terminals)

Used for interfacing heater assemblies, CRA housings and ARA arrays to external line wiring.

#### Design Features

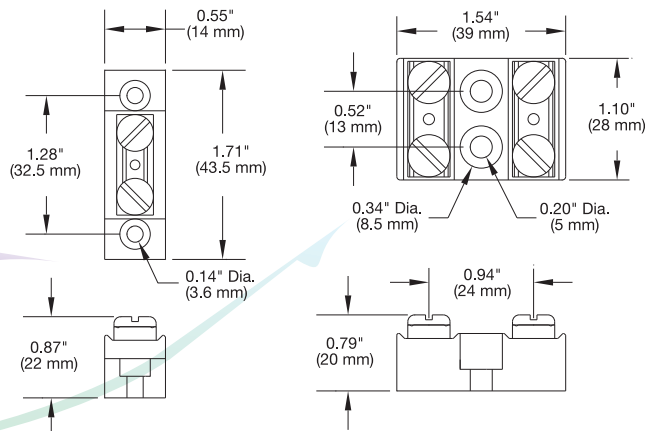
- \* **Maximum Voltage:** 500 VAC
- \* **Maximum Current:** 44 Amps @ 104°F ambient
- \* **Maximum Temperature:** 240°C/464°F
- \* **Wire Gauge:** 18 to 8 ga.
- \* **Terminal Screw:** M4, zinc-plated steel
- \* **Body Material:** Steatite
- \* **Agency Approvals:** None

#### Optional Terminal Hardware

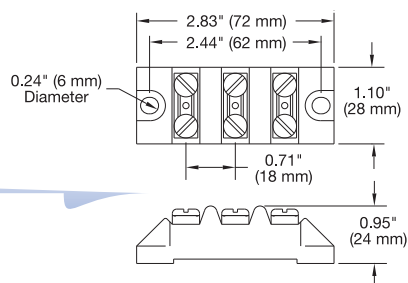
**Stainless Steel Flat Washer — Part Number: WAS-109-101**

**Spring Lock Washers — Part Number: WAS-118-108**

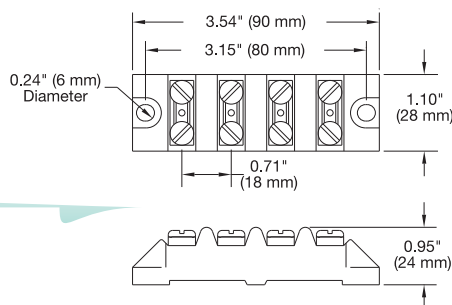
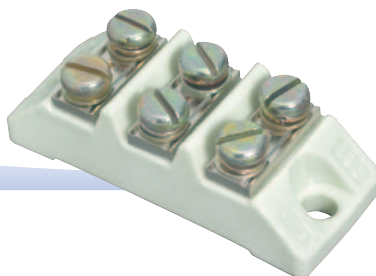
Part Number: EHD-108-106



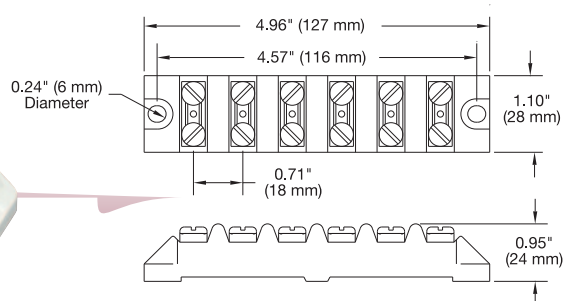
Part Number: EHD-108-107



Part Number: EHD-108-108



Part Number: EHD-108-109



Part Number: EHD-108-105



*All Items Available from Stock*



### Stock Hi-Temp (900°F) Nickel Plated Steel Uninsulated Terminals

The following optional terminals are available for use with Ceramic E-Mitter heaters and for assembly wiring. (Ceramic E-Mitters come standard with Part Number TER-115-112 #8-10 Ni Plated Steel spade terminals.)

Terminal Type	Description	Usage	Part Number
Ring	#10 stud, 22-18 ga. wire	Heater leads	TER-110-117
	#10 stud, 16-14 ga. wire	Misc.	TER-110-106
	#10 stud, 16-14 ga. wire	Misc. (Monel material)	TER-110-104
	#10 stud, 12-10 ga. wire	Line Wiring of Assy.	TER-110-111
	#8 stud, 22-18 ga. wire	Heater leads	TER-109-110*
	#8 stud, 16-14 ga. wire	Heater leads	TER-109-104
Spade	#8 stud, 12-10 ga. wire	Line wiring of Assy.	TER-109-106
	#10 stud, 22-18 ga. wire	Misc.	TER-115-111
	#8-10 stud, 22-18 ga. wire	Heater leads (Standard)	TER-115-112*
Straight	#8 stud, 16-14 ga. wire	Internal CRA & ARA wiring	TER-115-113*
	1/4" long Ni 200 Barrel Crimp	T/C or Heater leads	CON-101-101



*All Items Available from Stock*

\* Standard sizes for heater leads to internal ceramic terminal blocks used in CRA housings and radiant arrays. Must be used with EHD-108-101 (2-pole) or EHD-108-121 (3-pole) standard terminal blocks.

### Stock High Temperature Stranded Lead Wire

The following insulated lead wires are available for internal bussing and the line input wiring of CRA Linear Housing Assemblies and AR\_ Radiant Panels.



Temperature Rating	Size & Conductor	Maximum Amperage	100 Foot Spool	250 Foot Spool	500 Foot Spool	Usage
450°C, 600V	18 ga. NCC	12.3 @ 300°C (572°F)	LDWR-1088	LDWR-1098	LDWR-1142	Heater lead modifications
450°C, 600V	16 ga. NCC	18.0 @ 300°C (572°F)	LDWR-1089	LDWR-1099	LDWR-1143	Miscellaneous
450°C, 600V	14 ga. NCC	21.2 @ 300°C (572°F)	LDWR-1090	LDWR-1100	LDWR-1144	Standard for internal wiring of factory wired units
450°C, 600V	12 ga. NCC	26.2 @ 300°C (572°F)	LDWR-1091	LDWR-1101	LDWR-1145	Panel zones & line input
450°C, 600V	10 ga. NCC	35.6 @ 300°C (572°F)	LDWR-1092	LDWR-1102	LDWR-1146	Panel zones & line input
250°C, 600V	18 ga. NPC	9.0 @ 200°C (392°F)	LDWR-1093	LDWR-1103	LDWR-1147	Heater lead modifications
250°C, 600V	16 ga. NPC	14.2 @ 200°C (392°F)	LDWR-1094	LDWR-1104	LDWR-1148	Miscellaneous
250°C, 600V	14 ga. NPC	21.1 @ 200°C (392°F)	LDWR-1095	LDWR-1105	LDWR-1149	Internal panel wiring
250°C, 600V	12 ga. NPC	29.5 @ 200°C (392°F)	LDWR-1096	LDWR-1106	LDWR-1150	Panel zones & line input
250°C, 600V	10 ga. NPC	37.6 @ 200°C (392°F)	LDWR-1097	LDWR-1107	LDWR-1151	Panel zones & line input

NCC = Nickel Clad Copper, 27% Nickel by weight. NPC = Nickel Plated Copper, 2% Nickel by weight.

The 450°C (842°F) rated wires amperage is derated over 300°C (572°F). Maximum ambient is 400°C (752°F).

The 250°C (482°F) rated wires amperage is derated over 200°C (392°F). Maximum ambient is 225°C (437°F).

See page 15-2 for additional specifications.

See amperage tables in Engineering Section 16 for more details on current carrying capacity of Tempco's high temperature lead wire. For bare wire consult Tempco, for ceramic beads see page 15-13.

### Stock High Temperature Thermocouple Wire

The following insulated thermocouple wires are available for internal bussing and wiring of CRA Linear Housing Assemblies and AR\_ Radiant Panels to external control systems.

These duplex thermocouple wires have color coded fiberglass insulation over each lead within an overall fiberglass insulation jacket.



Type	Wire Style	100 Foot Spool	250 Foot Spool
K	20 ga. solid	TCWR-1025	TCWR-1029
K	20 ga. stranded	TCWR-1034	TCWR-1036
J	20 ga. solid	TCWR-1028	TCWR-1032
J	20 ga. stranded	TCWR-1033	TCWR-1035
With Stainless Steel Overbraid			
K	20 ga. stranded	TCWR-1049	TCWR-1053
J	20 ga. stranded	TCWR-1047	TCWR-1051

See page 14-107 and 15-4 for additional thermocouple wire and specifications.

For bare wire and sleeving consult Tempco.

### CRP 12" × 12" Modular Panels – METAMORPHING Yellow to Orange

## New Cost Effective and Self-Contained Ceramic Infrared Panel Heater Offers Ease of Installation and Trouble-Free Performance



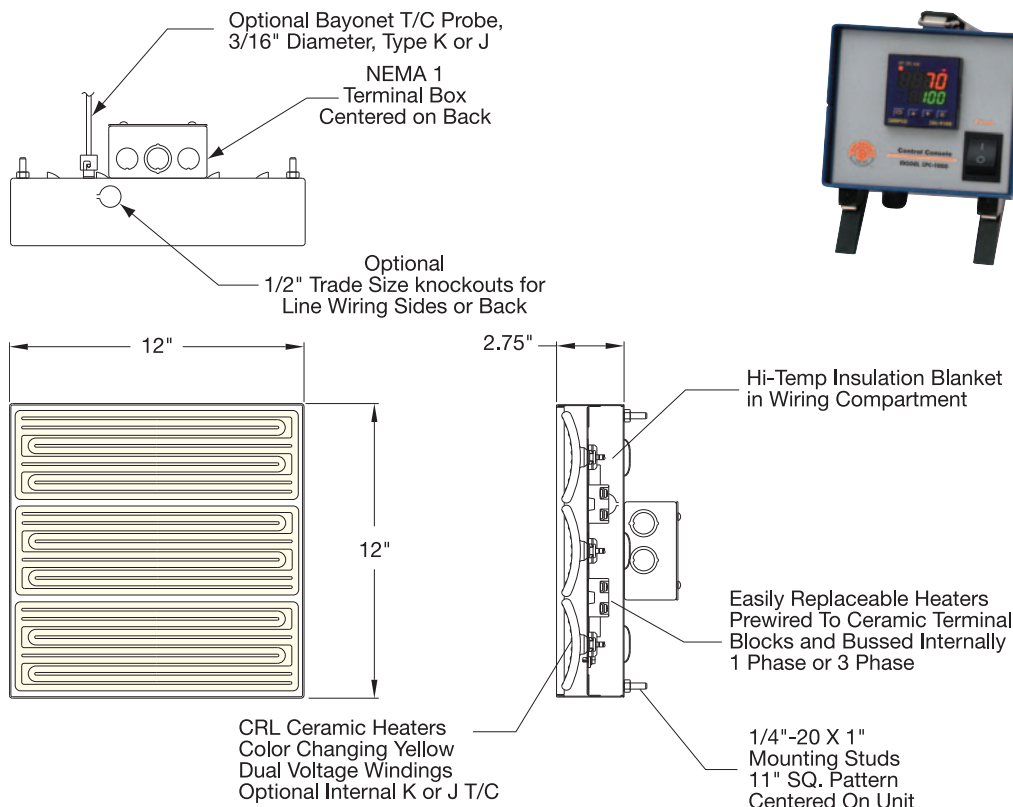
*Three CRL E-Mitter heaters in one panel.  
See page 7-26 for CRP Modular Panel with  
an additional emitting glass face.*

#### Design Features

- \* Standard colors are metamorphing yellow (cold) to orange (hot), and traditional white. Optional colors are metamorphing rose (cold) to grey (hot) and black.
- \* Low profile 20 ga. aluminized steel or stainless steel housing.
- \* Standard stocked voltage: 120, 220-240V or 480V as noted; other voltages are available.
- \* Low noise type K thermocouple mounted internally in center heater. Optional type J thermocouple is also available.
- \* Watt density range: from 11w/in<sup>2</sup> to 35w/in<sup>2</sup>
- \* Standard operating temp range: 750°F to 1300°F
- \* Best when used at radiation distances of 4-10" from application.
- \* Performance is unaffected by vibration or adverse atmospheric conditions.
- \* 3 to 6µm infrared radiation wavelength.
- \* Made to order.

### Tabletop Point-of-Use Temperature Control Console Systems

See Section 13, page 13-52





### Standard Ratings of Modular 12" × 12" CRP Radiant Panels – METAMORPHING Yellow to Orange

#### Aluminized Steel Housing with NEMA 1 Terminal Box (4" square by 2-1/8" deep)

KW	Watt Density (W/in <sup>2</sup> )	Part Number									
		120V		240V-1Ph		240V-3Ph		480V-1Ph		480V-3Ph	
		No T/C	K T/C	No T/C	K T/C	No T/C	K T/C	No T/C	K T/C	No T/C	K T/C
1.50	11.6	CRP20001	CRP20002	CRP20003	CRP20004	CRP20005	CRP20006	CRP20007	CRP20008	CRP20009	CRP20010
2.25	17.4	CRP20011	CRP20012	CRP20013	CRP20014	CRP20015	CRP20016	CRP20017	CRP20018	CRP20019	CRP20020
3.00	23.0	—	—	CRP20021	CRP20022	CRP20023	CRP20024	CRP20025	CRP20026	CRP20027	CRP20028
3.75	29.0	—	—	CRP20029	CRP20030	CRP20031	CRP20032	CRP20033	CRP20034	CRP20035	CRP20036
4.50	35.0	—	—	CRP20037	CRP20038	CRP20039	CRP20040	CRP20041	CRP20042	CRP20043	CRP20044

**NOTE:** K T/C panels have one low noise internal T/C in center heater with extension wires routed into rear terminal box.

#### Stainless Steel Housing with NEMA 1 Terminal Box (Medical or Food Applications)

KW	Watt Density (W/in <sup>2</sup> )	Part Number									
		120V		240V-1Ph		240V-3Ph		480V-1Ph		480V-3Ph	
		No T/C	K T/C	No T/C	K T/C	No T/C	K T/C	No T/C	K T/C	No T/C	K T/C
1.50	11.6	CRP20045	CRP20046	CRP20047	CRP20048	CRP20049	CRP20050	CRP20051	CRP20052	CRP20053	CRP20054
2.25	17.4	CRP20055	CRP20056	CRP20057	CRP20058	CRP20059	CRP20060	CRP20061	CRP20062	CRP20063	CRP20064
3.00	23.0	—	—	CRP20065	CRP20066	CRP20067	CRP20068	CRP20069	CRP20070	CRP20071	CRP20072
3.75	29.0	—	—	CRP20073	CRP20074	CRP20075	CRP20076	CRP20077	CRP20078	CRP20079	CRP20080
4.50	35.0	—	—	CRP20081	CRP20082	CRP20083	CRP20084	CRP20085	CRP20086	CRP20087	CRP20088

**NOTE:** K T/C panels have one low noise internal T/C in center heater with extension wires routed into rear terminal box.

### Replacement Heaters for Standard Modular 12" × 12" CRP Radiant Panels

Panel KW	Heater Watts	Part Number					
		120V		120V-240V		240V-480V	
		No T/C	K T/C	No T/C	K T/C	No T/C	K T/C
1.50	500	CRL20021	CRL20022	CRL20025	CRL20026	CRL20023	CRL20024
2.25	750	—	—			CRL20027	CRL20028
3.00	1000	—	—	CRL20031	CRL20032	CRL20029	CRL20030
3.75	1250	—	—			CRL20031	CRL20032
4.50	1500	—	—			CRL20033	CRL20034

**NOTES:** All dual voltage heaters have two windings (parallel connected for the lower voltage & series connected for the higher voltage).

120V heaters are single winding designs.

K T/C units have an internal "low noise" style thermocouple with 12" leads.

#### Standard Panel Specifications

KW	Panel Watt Density***	Typical Operating Temperature**		Primary Emitted Wavelength*
		°F	°C	
1.50	12.0	796	424	4.2
2.25	18.0	956	513	3.7
3.00	24.0	1076	580	3.4
3.75	30.0	1191	644	3.2
4.50	36.0	1308	709	3.0

\*Peak infrared radiation wavelength as calculated from Wien's Law, for operating temperature shown. Expressed in microns (μm). Operating temperature based on room ambient testing @ 72°F.

\*\*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.

\*\*\*Watt density calculated using total heater face surface area within panel.

**DANGER: Hazard of Fire.** These heaters are not for use in atmospheres where flammable vapors, gases or liquids are present as defined in the National Electrical Code. Where solvents, water, etc. are being evaporated from the process it is necessary to provide substantial quantities of ventilating air to carry away all resulting vapors.



**WARNING: Hazard of Electric Shock.** Installation must be grounded to earth to avoid shock hazard. Disconnect power to installation before servicing or installing heater.

**WARNING: Do not use Copper Wire** to make connections inside this heater. High temperatures will oxidize copper. Use of nickel plated or nickel clad insulated copper wire is recommended. Wire insulation rating must be suitable for the ambient temperature of the wiring installation.

**Installation:** Do not mount CRP Panel Heaters closer than 6 inches to any structural material that does not have at least a 200°C (392°F) continuous temperature rating.

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**CONTINUED**

### CRP 12" × 12" Modular Glass Face Panels Standard Ratings



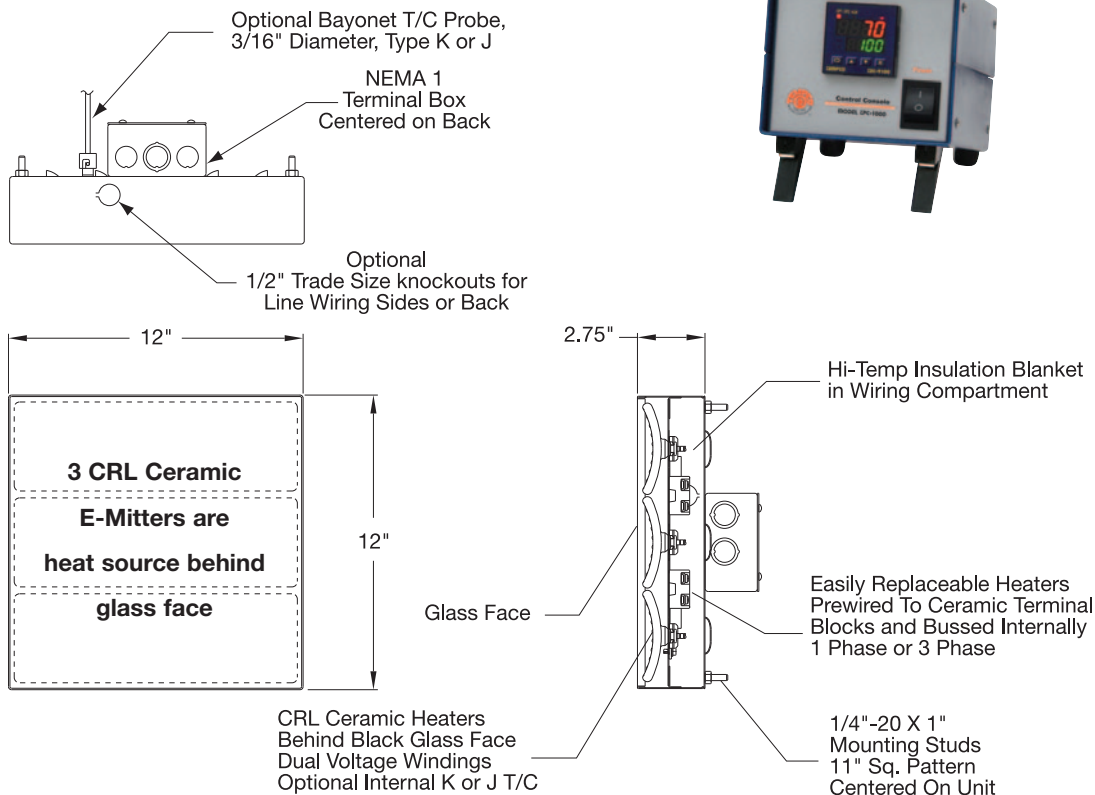
*Three CRL E-Mitter heaters behind an emitting dark red glass face*

#### Design Features

- \* Dark red face glass is standard. Glass provides for ease of cleaning.
- \* Low profile 20 gauge aluminized steel or stainless steel housing
- \* Standard stocked voltage: 120, 220-240V or 480V as noted; other voltages are available.
- \* Low noise type K thermocouple mounted internally in center heater. Optional type J thermocouple is also available.
- \* Watt density range: from 11w/in<sup>2</sup> to 35w/in<sup>2</sup>
- \* Standard operating temp range: 750°F to 1300°F
- \* Best when used at radiation distances of 4-10" from application.
- \* Performance is unaffected by vibration or adverse atmospheric conditions.
- \* 3 to 6μm infrared radiation wavelength.
- \* Optional clear face glass is available.  
If required, please specify when ordering.
- \* Made to order.

### Tabletop Point-of-Use Temperature Control Console Systems

See Section 13, page 13-52







### Standard Ratings of Modular 12" × 12" CRP Glass Faced Radiant Panels

#### Aluminized Steel Housing with NEMA 1 Terminal Box (4" square by 2.13" deep)

KW	Watt Density (W/in <sup>2</sup> )	Part Number									
		120V		240V-1Ph		240V-3Ph		480V-1Ph		480V-3Ph	
		No T/C	K T/C	No T/C	K T/C	No T/C	K T/C	No T/C	K T/C	No T/C	K T/C
1.50	11.6	CRP20089	CRP20090	CRP20091	CRP20092	CRP20093	CRP20094	CRP20095	CRP20096	CRP20097	CRP20098
2.25	17.4	CRP20099	CRP20100	CRP20101	CRP20102	CRP20103	CRP20104	CRP20105	CRP20106	CRP20107	CRP20108
3.00	23.0	—	—	CRP20109	CRP20110	CRP20111	CRP20112	CRP20113	CRP20114	CRP20115	CRP20116
3.75	29.0	—	—	CRP20117	CRP20118	CRP20119	CRP20120	CRP20121	CRP20122	CRP20123	CRP20124
4.50	35.0	—	—	CRP20125	CRP20126	CRP20127	CRP20128	CRP20129	CRP20130	CRP20131	CRP20132

**NOTE:** K T/C panels have one low noise internal T/C in center heater with extension wires routed into rear terminal box.

#### Stainless Steel Housing with NEMA 1 Terminal Box (4" square by 2.13" deep)

KW	Watt Density (W/in <sup>2</sup> )	Part Number									
		120V		240V-1Ph		240V-3Ph		480V-1Ph		480V-3Ph	
		No T/C	K T/C	No T/C	K T/C	No T/C	K T/C	No T/C	K T/C	No T/C	K T/C
1.50	11.6	CRP20133	CRP20134	CRP20135	CRP20136	CRP20137	CRP20138	CRP20139	CRP20140	CRP20141	CRP20142
2.25	17.4	CRP20143	CRP20144	CRP20145	CRP20146	CRP20147	CRP20148	CRP20149	CRP20150	CRP20151	CRP20152
3.00	23.0	—	—	CRP20153	CRP20154	CRP20155	CRP20156	CRP20157	CRP20158	CRP20159	CRP20160
3.75	29.0	—	—	CRP20161	CRP20162	CRP20163	CRP20164	CRP20165	CRP20166	CRP20167	CRP20168
4.50	35.0	—	—	CRP20169	CRP20170	CRP20171	CRP20172	CRP20173	CRP20174	CRP20175	CRP20176

**NOTE:** K T/C panels have one low noise internal T/C in center heater with extension wires routed into rear terminal box.

### Replacement Heaters for Standard Modular 12" × 12" CRP Radiant Panels

Panel KW	Heater Watts	Part Number			
		120V		240V-480V	
		No T/C	K T/C	No T/C	K T/C
1.50	500	CRL20021	CRL20022	CRL20023	CRL20024
2.25	750	CRL20025	CRL20026	CRL20027	CRL20028
3.00	1000	—	—	CRL20029	CRL20030
3.75	1250	—	—	CRL20031	CRL20032
4.50	1500	—	—	CRL20033	CRL20034

**NOTE:** All 240/480V heaters have two windings for dual voltage use (Parallel connected for 240V & series connected for 480V)  
120V heaters are single winding designs.  
K T/C units have an internal "low noise" style thermocouple with 12" leads.

### CRP Replacement Glass

Discontinued	
Color	Number
Dark Red	GLS-101-101
Clear	GLS-101-102

**DANGER: Hazard of Fire.** These heaters are not for use in atmospheres where flammable vapors, gases or liquids are present as defined in the National Electrical Code. Where solvents, water, etc. are being evaporated from the process it is necessary to provide substantial quantities of ventilating air to carry away all resulting vapors.



**WARNING: Hazard of Electric Shock.** Installation must be grounded to earth to avoid shock hazard. Disconnect power to installation before servicing or installing heater.

**WARNING: Do not use Copper Wire** to make connections inside this heater. High temperatures will oxidize copper. Use of nickel plated or nickel clad insulated copper wire is recommended. Wire insulation rating must be suitable for the ambient temperature of the wiring installation.

**Installation:** Do not mount CRP Panel Heaters closer than 6 inches to any structural material that does not have at least a 200°C (392°F) continuous temperature rating.

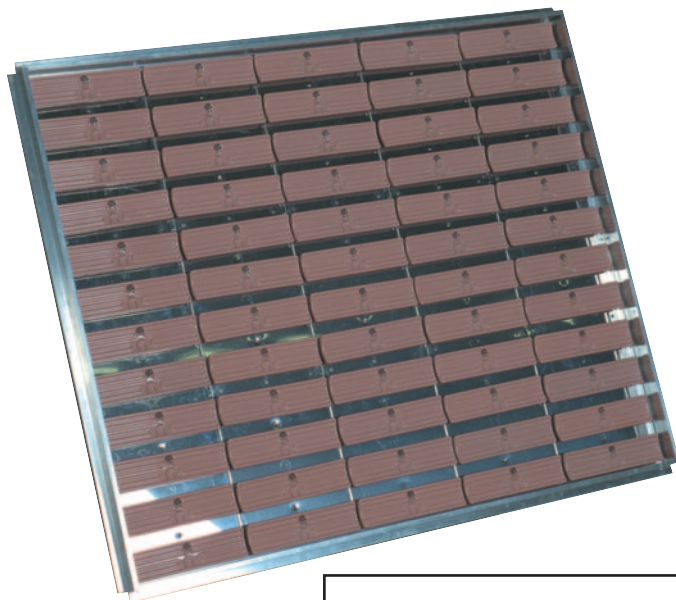
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# Radiant Process Heaters

## ARA Single Panel Arrays

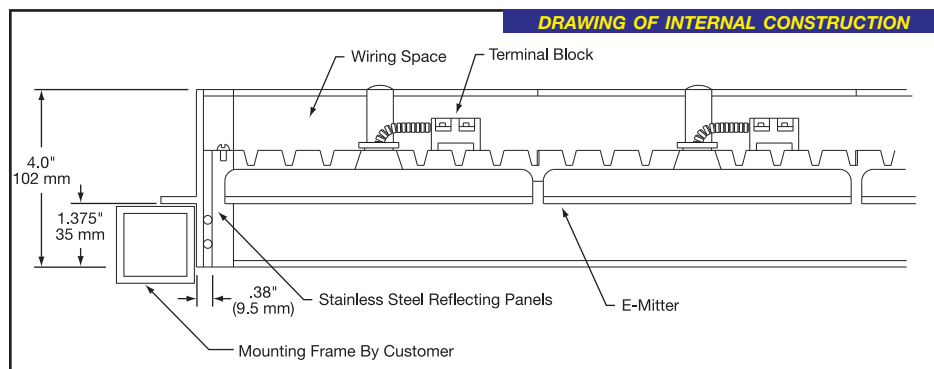


### ARA Array Assemblies for CRB, CRN, CRM, CRC, CRZ, CRL, CRH and CRG E-Mitters®



#### Design Features

- \* Custom Engineered/Manufactured
- \* Lightweight extruded aluminum outer housing
- \* Each heater's power leads are connected to an individual ceramic terminal block
- \* NCC or Nickel wire with heat resistant insulation is used for wiring between terminal blocks (see pages 7-21 through 7-23)
- \* Zones with different radiant heat levels can be achieved by using different wattage heaters (each zone would have a heater with built-in thermocouple for temperature control)
- \* Shipped fully assembled
- \* Optional factory wiring and power control panels
- \* Optional ceramic fiber insulation in wiring space
- \* Optional entrances in rear cover or sides to customer specs



#### Steps to Design a Custom ARA E-Mitter Array for your application

- 1.) Select a panel array size for the Style E-Mitter:  
CRB and CRN E-Mitter panel sizes can be found on page 7-29.  
CRM E-Mitter panel size can be found on page 7-30.  
CRC and CRZ E-Mitter panel sizes can be found on page 7-31.  
CRL E-Mitter panel sizes can be found on page 7-32.  
CRH and CRG E-Mitter panel sizes can be found on page 7-33.  
CRD E-Mitter panel sizes can be found on page 7-35.
- 2.) Determine any special heat zoning.
- 3.) Specify any E-Mitters that will have thermocouples.



#### Ordering Information

Refer to the worksheet on page 7-36



**DANGER: Hazard of Fire.** These heaters are not for use in atmospheres where flammable vapors, gases or liquids are present as defined in the National Electrical Code. Where solvents, water, etc. are being evaporated from the process it is necessary to provide substantial quantities of ventilating air to carry away all resulting vapors.

Do not mount heater closer than 6 inches to any structural material that does not have at least a 200°C continuous temperature rating.

**WARNING: Hazard of Electric Shock.** Installation must be grounded to earth to avoid shock hazard. Disconnect power to installation before servicing or installing heater.

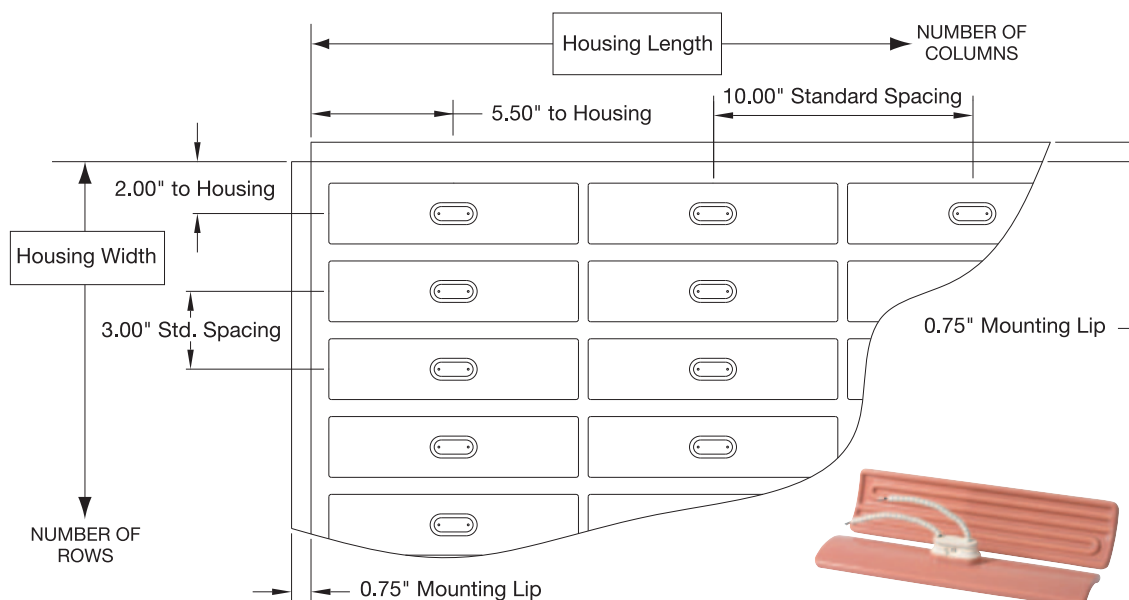
### Series CRB and CRN E-Mitter Panel Arrays Standard Style ARA Structural Housing Dimensions

- A) The Number of Rows will determine the Housing Width. For overall width add 1.50" (for the mounting lips).  
B) The Number of Columns will determine the Housing Length. For overall length add 1.50" (for the mounting lips).

Number of Rows	Number of Columns					
	1 W x L	2 W x L	3 W x L	4 W x L	5 W x L	6 W x L
1	4 x 11	4 x 21	4 x 31	4 x 41	4 x 51	4 x 61
2	7 x 11	7 x 21	7 x 31	7 x 41	7 x 51	7 x 61
3	10 x 11	10 x 21	10 x 31	10 x 41	10 x 51	10 x 61
4	13 x 11	13 x 21	13 x 31	13 x 41	13 x 51	13 x 61
5	16 x 11	16 x 21	16 x 31	16 x 41	16 x 51	16 x 61
6	19 x 11	19 x 21	19 x 31	19 x 41	19 x 51	19 x 61
7	22 x 11	22 x 21	22 x 31	22 x 41	22 x 51	22 x 61
8	25 x 11	25 x 21	25 x 31	25 x 41	25 x 51	25 x 61
9	28 x 11	28 x 21	28 x 31	28 x 41	28 x 51	—
10	31 x 11	31 x 21	31 x 31	31 x 41	—	—
11	34 x 11	34 x 21	34 x 31	34 x 41	—	—
12	37 x 11	37 x 21	37 x 31	37 x 41	—	—
13	40 x 11	40 x 21	40 x 31	Dimensions are in inches		
14	43 x 11	43 x 21	43 x 31			
15	46 x 11	46 x 21	46 x 31	—	—	—
16	49 x 11	49 x 21	—	—	—	—
17	52 x 11	52 x 21	—	—	—	—
18	55 x 11	55 x 21	—	—	—	—



**Note:** Structural Housing Dimensions (width x length) are in inches. For overall dimensions add 0.75" per side for the mounting lip.



**CRB & CRN E-Mitters (60 x 245 mm)**

#### Custom Engineered/Manufactured Panels

- Multiple panels are used for larger arrays.
- Consult factory for larger panels not shown in table or custom panels with other spacings. Minimum spacing for CRB and CRN heaters is 2.50" x 10.00".
- Special narrow panels having a maximum 40 rows x 1 or 2 columns, & up to 8 rows x 12 columns can be made on special order (max. housing size 121" x 25").

**We welcome your inquiries.**  
**Take advantage of Tempco's economical approach to manufacturing panels.**

**WARNING:** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

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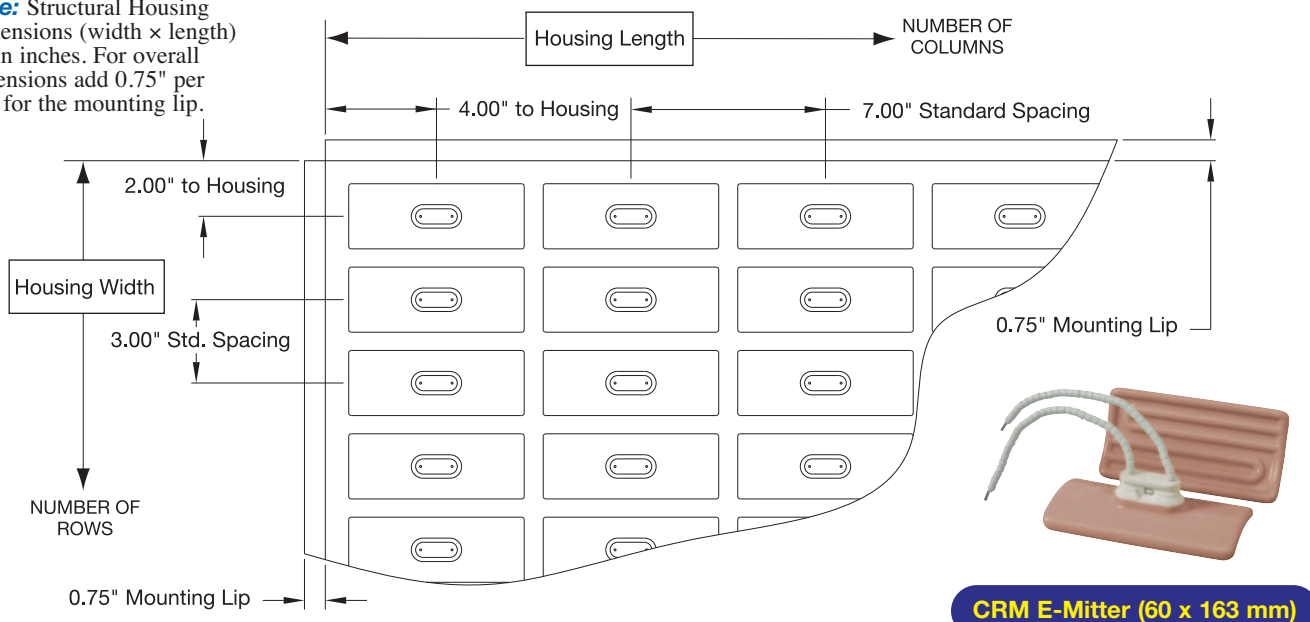
### Series CRM E-Mitter Panel Arrays Standard Style ARA Structural Housing Dimensions

- A) The Number of Rows will determine the Housing Width. For overall width add 1.50" (for the mounting lips).  
B) The Number of Columns will determine the Housing Length. For overall length add 1.50" (for the mounting lips).

Number of Rows	Number of Columns								
	1 W x L	2 W x L	3 W x L	4 W x L	5 W x L	6 W x L	7 W x L	8 W x L	9 W x L
1	4 x 8	4 x 15	4 x 22	4 x 29	4 x 36	4 x 43	4 x 50	4 x 57	4 x 64
2	7 x 8	7 x 15	7 x 22	7 x 29	7 x 36	7 x 43	7 x 50	7 x 57	7 x 64
3	10 x 8	10 x 15	10 x 22	10 x 29	10 x 36	10 x 43	10 x 50	10 x 57	10 x 64
4	13 x 8	13 x 15	13 x 22	13 x 29	13 x 36	13 x 43	13 x 50	13 x 57	13 x 64
5	16 x 8	16 x 15	16 x 22	16 x 29	16 x 36	16 x 43	16 x 50	16 x 57	16 x 64
6	19 x 8	19 x 15	19 x 22	19 x 29	19 x 36	19 x 43	19 x 50	19 x 57	19 x 64
7	22 x 8	22 x 15	22 x 22	22 x 29	22 x 36	22 x 43	22 x 50	22 x 57	22 x 64
8	25 x 8	25 x 15	25 x 22	25 x 29	25 x 36	25 x 43	25 x 50	25 x 57	25 x 64
9	28 x 8	28 x 15	28 x 22	28 x 29	28 x 36	28 x 43	28 x 50	—	—
10	31 x 8	31 x 15	31 x 22	31 x 29	31 x 36	31 x 43	31 x 50	—	—
11	34 x 8	34 x 15	34 x 22	34 x 29	34 x 36	34 x 43	—	—	—
12	37 x 8	37 x 15	37 x 22	37 x 29	37 x 36	37 x 43	—	—	—
13	40 x 8	40 x 15	40 x 22	40 x 29	40 x 36	—	Dimensions are in inches		
14	43 x 8	43 x 15	43 x 22	43 x 29	—	—			
15	46 x 8	46 x 15	46 x 22	46 x 29	—	—	—	—	—
16	49 x 8	49 x 15	49 x 22	—	—	—	—	—	—
17	52 x 8	52 x 15	52 x 22	—	—	—	—	—	—
18	55 x 8	55 x 15	55 x 22	—	—	—	—	—	—



**Note:** Structural Housing Dimensions (width x length) are in inches. For overall dimensions add 0.75" per side for the mounting lip.



### Custom Engineered/Manufactured Panels

- Multiple panels are used for larger arrays.
- Consult factory for larger panels not shown in table or custom panels with other spacings. Minimum spacing for CRM heaters is 2.50" x 7.00".
- Special narrow panels having a maximum 40 rows x 1, 2, or 3 columns, & up to 8 rows x 18 columns can be made on special order (max. housing size 127" x 25").

**Consult us with your requirements.**  
**There is no substitute for our experience.**

**WARNING:** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



### Series CRC and CRZ E-Mitter Panel Arrays Standard Style ARA Structural Housing Dimensions

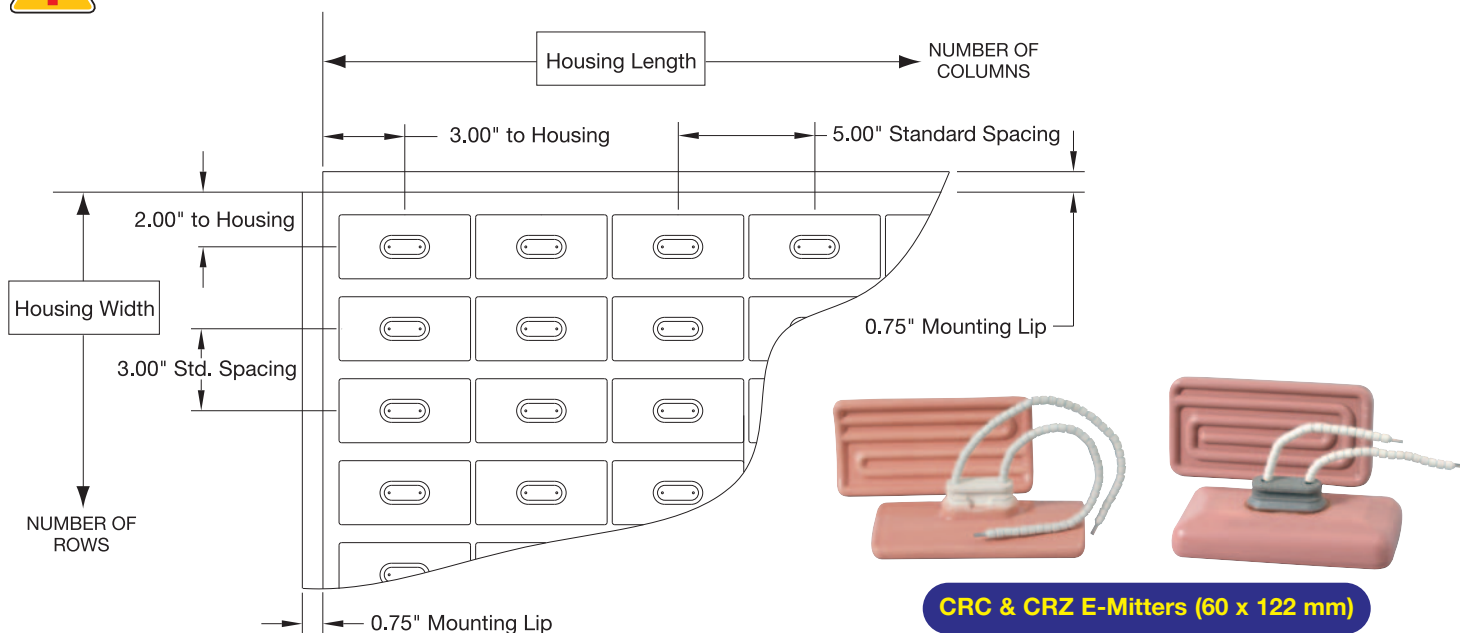
A) The Number of Rows will determine the Housing Width. For overall width add 1.50" (for the mounting lips).

B) The Number of Columns will determine the Housing Length. For overall length add 1.50" (for the mounting lips).

Number of Rows	Number of Columns											
	1 W x L	2 W x L	3 W x L	4 W x L	5 W x L	6 W x L	7 W x L	8 W x L	9 W x L	10 W x L	11 W x L	12 W x L
1	4 x 6	4 x 11	4 x 16	4 x 21	4 x 26	4 x 31	4 x 36	4 x 41	4 x 46	4 x 51	4 x 56	4 x 61
2	7 x 6	7 x 11	7 x 16	7 x 21	7 x 26	7 x 31	7 x 36	7 x 41	7 x 46	7 x 51	7 x 56	7 x 61
3	10 x 6	10 x 11	10 x 16	10 x 21	10 x 26	10 x 31	10 x 36	10 x 41	10 x 46	10 x 51	10 x 56	10 x 61
4	13 x 6	13 x 11	13 x 16	13 x 21	13 x 26	13 x 31	13 x 36	13 x 41	13 x 46	13 x 51	13 x 56	13 x 61
5	16 x 6	16 x 11	16 x 16	16 x 21	16 x 26	16 x 31	16 x 36	16 x 41	16 x 46	16 x 51	16 x 56	16 x 61
6	19 x 6	19 x 11	19 x 16	19 x 21	19 x 26	19 x 31	19 x 36	19 x 41	19 x 46	19 x 51	19 x 56	19 x 61
7	22 x 6	22 x 11	22 x 16	22 x 21	22 x 26	22 x 31	22 x 36	22 x 41	22 x 46	22 x 51	22 x 56	22 x 61
8	25 x 6	25 x 11	25 x 16	25 x 21	25 x 26	25 x 31	25 x 36	25 x 41	25 x 46	25 x 51	25 x 56	25 x 61
9	28 x 6	28 x 11	28 x 16	28 x 21	28 x 26	28 x 31	28 x 36	28 x 41	28 x 46	28 x 51	—	—
10	31 x 6	31 x 11	31 x 16	31 x 21	31 x 26	31 x 31	31 x 36	31 x 41	—	—	—	—
11	34 x 6	34 x 11	34 x 16	34 x 21	34 x 26	34 x 31	34 x 36	34 x 41	—	—	—	—
12	37 x 6	37 x 11	37 x 16	37 x 21	37 x 26	37 x 31	37 x 36	37 x 41	—	—	—	—
13	40 x 6	40 x 11	40 x 16	40 x 21	40 x 26	40 x 31	—	—	Dimensions are in inches			—
14	43 x 6	43 x 11	43 x 16	43 x 21	43 x 26	43 x 31	—	—				—
15	46 x 6	46 x 11	46 x 16	46 x 21	46 x 26	46 x 31	—	—	—	—	—	—
16	49 x 6	49 x 11	49 x 16	49 x 21	—	—	—	—	—	—	—	—
17	52 x 6	52 x 11	52 x 16	52 x 21	—	—	—	—	—	—	—	—
18	55 x 6	55 x 11	55 x 16	55 x 21	—	—	—	—	—	—	—	—



**Note:** Structural Housing Dimensions (width x length) are in inches.  
For overall dimensions add 0.75" per side for the mounting lip.



### Custom Engineered/Manufactured Panels

- Multiple panels are used for larger arrays.
- Consult factory for larger panels not shown in table or custom panels with other spacings. Minimum spacing for CRC and CRZ heaters is 2.50" x 5.00".
- Special narrow panels having a maximum 40 rows x 1, 2, 3 or 4 columns, & up to 8 rows x 12 columns can be made on special order (max. housing size 121" x 25").

**We welcome your inquiries.**

**Take advantage of Tempco's economical approach to manufacturing panels.**



**WARNING:** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

### Series CRL E-Mitter Panel Arrays Standard Style ARA Structural Housing Dimensions

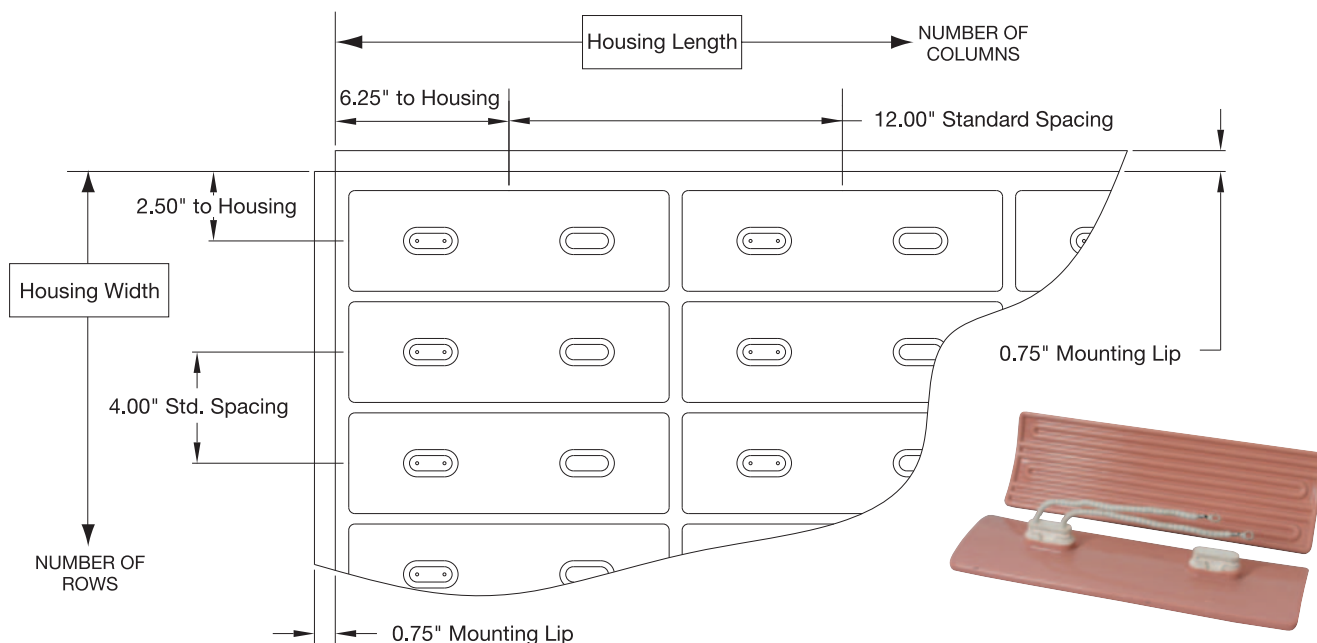
A) The Number of Rows will determine the Housing Width. For overall width add 1.50" (for the mounting lips).

B) The Number of Columns will determine the Housing Length. For overall length add 1.50" (for the mounting lips).

Number of Rows	Number of Columns				
	1 W x L	2 W x L	3 W x L	4 W x L	5 W x L
1	5 x 12.5	5 x 24.5	5 x 36.5	5 x 48.5	5 x 60.5
2	9 x 12.5	9 x 24.5	9 x 36.5	9 x 48.5	9 x 60.5
3	13 x 12.5	13 x 24.5	13 x 36.5	13 x 48.5	13 x 60.5
4	17 x 12.5	17 x 24.5	17 x 36.5	17 x 48.5	17 x 60.5
5	21 x 12.5	21 x 24.5	21 x 36.5	21 x 48.5	21 x 60.5
6	25 x 12.5	25 x 24.5	25 x 36.5	25 x 48.5	25 x 60.5
7	29 x 12.5	29 x 24.5	29 x 36.5	29 x 48.5	—
8	33 x 12.5	33 x 24.5	33 x 36.5	—	—
9	37 x 12.5	37 x 24.5	37 x 36.5	—	—
10	41 x 12.5	41 x 24.5	41 x 36.5	—	—
11	45 x 12.5	45 x 24.5	45 x 36.5	—	—
12	49 x 12.5	49 x 24.5	—	—	—
13	53 x 12.5	53 x 24.5	Dimensions are in inches		
14	57 x 12.5	57 x 24.5			
15	61 x 12.5	61 x 24.5			



**Note:** Structural Housing Dimensions (width x length) are in inches. For overall dimensions add 0.75" per side for the mounting lip.



CRL E-Mitter (95 x 295 mm)

### Custom Engineered/Manufactured Panels

- Multiple panels are used for larger arrays.
- Consult factory for larger panels not shown in table or custom panels with other spacings. Minimum spacing for CRL heaters is 4.00" x 12.00".
- Special narrow panels having a maximum 30 rows x 1 or 2 columns, & up to 6 rows x 9 columns can be made on special order (max. housing size 121" x 25").

**Consult us with your requirements**  
**There is no substitute for our experience.**

**WARNING:** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

### Series CRH and CRG E-Mitter Panel Arrays Standard Style ARA Structural Housing Dimensions

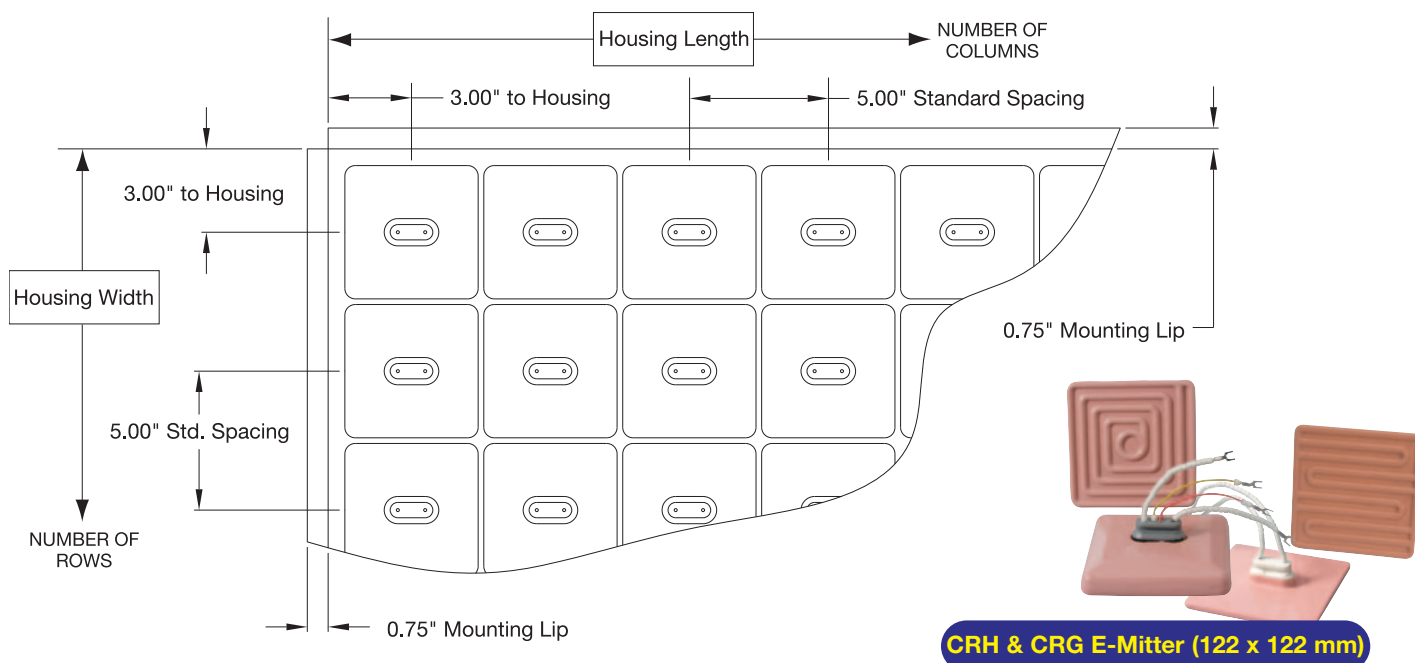
A) The Number of Rows will determine the Housing Width. For overall width add 1.50" (for the mounting lips).

B) The Number of Columns will determine the Housing Length. For overall length add 1.50" (for the mounting lips).

Number of Rows	Number of Columns											
	1 W x L	2 W x L	3 W x L	4 W x L	5 W x L	6 W x L	7 W x L	8 W x L	9 W x L	10 W x L	11 W x L	12 W x L
1	6 x 6	6 x 11	6 x 16	6 x 21	6 x 26	6 x 31	6 x 36	6 x 41	6 x 46	6 x 51	6 x 56	6 x 61
2	11 x 6	11 x 11	11 x 16	11 x 21	11 x 26	11 x 31	11 x 36	11 x 41	11 x 46	11 x 51	11 x 56	11 x 61
3	16 x 6	16 x 11	16 x 16	16 x 21	16 x 26	16 x 31	16 x 36	16 x 41	16 x 46	16 x 51	16 x 56	16 x 61
4	21 x 6	21 x 11	21 x 16	21 x 21	21 x 26	21 x 31	21 x 36	21 x 41	21 x 46	21 x 51	21 x 56	21 x 61
5	26 x 6	26 x 11	26 x 16	26 x 21	26 x 26	26 x 31	26 x 36	26 x 41	26 x 46	26 x 51	26 x 56	26 x 61
6	31 x 6	31 x 11	31 x 16	31 x 21	31 x 26	31 x 31	31 x 36	31 x 41	31 x 46	31 x 51	—	—
7	36 x 6	36 x 11	36 x 16	36 x 21	36 x 26	36 x 31	36 x 36	36 x 41	36 x 46	—	—	—
8	41 x 6	41 x 11	41 x 16	41 x 21	41 x 26	41 x 31	41 x 36	41 x 41	—	—	—	—
9	46 x 6	46 x 11	46 x 16	46 x 21	46 x 26	46 x 31	46 x 36	—	—	Dimensions are in inches		
10	51 x 6	51 x 11	51 x 16	51 x 21	51 x 26	51 x 31	—	—	—			
11	56 x 6	56 x 11	56 x 16	56 x 21	56 x 26	—	—	—	—			
12	61 x 6	61 x 11	61 x 16	61 x 21	61 x 26	—	—	—	—	—	—	—



**Note:** Structural Housing Dimensions (width x length) are in inches. For overall dimensions add 0.75" per side for the mounting lip.



### Custom Engineered/Manufactured Panels

- Multiple panels are used for larger arrays.
- Consult factory for larger panels not shown in table or custom panels with other spacings. Minimum spacing for CRH and CRG heaters is 5.00" x 5.00".
- Special narrow panels having a maximum 25 rows x 1 or 2 columns, & up to 8 rows x 9 columns can be made on special order (max. housing size 121" x 26").

**We welcome your inquiries.**  
**Take advantage of Tempco's economical approach to manufacturing panels.**

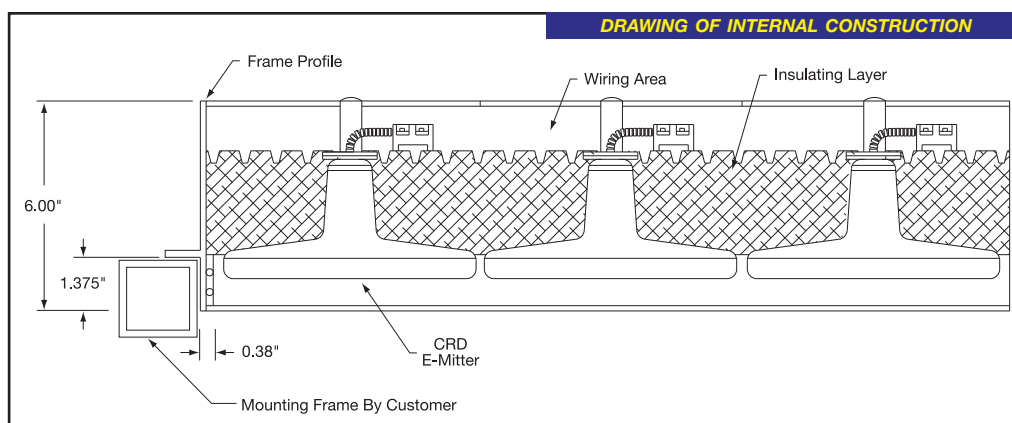
**WARNING:** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

### ARA Array Assemblies for CRD E-Mitters



#### Design Features

- \* *Lightweight extruded aluminum outer housing.*
- \* *All metal interior components are stainless steel.*
- \* *Designed for use with Style CRD E-Mitters, pages 7-10 and 7-11.*
- \* *Each heater's power leads are connected to an individual ceramic Terminal Block.*
- \* *NCC or Nickel wire with heat resistant insulation is used for wiring between terminal blocks.*
- \* *Zones with different radiant heat levels can be achieved by using different wattage heaters (each zone would have a heater with built-in thermocouple for temperature control).*
- \* *Shipped fully assembled.*
- \* *Optional factory wiring and power control panels.*
- \* *Optional ceramic fiber insulation in wiring space.*
- \* *Optional entrances in rear cover or sides to customer specs.*



The housing for the CRD heaters is the same construction as all ARA arrays except for the extra height needed for the long shaft of the CRD heaters. This space is then filled with ceramic fiber insulation with foil backing to keep the wiring and terminal area much cooler.

#### Ordering Information

Refer to the worksheet on page 7-36



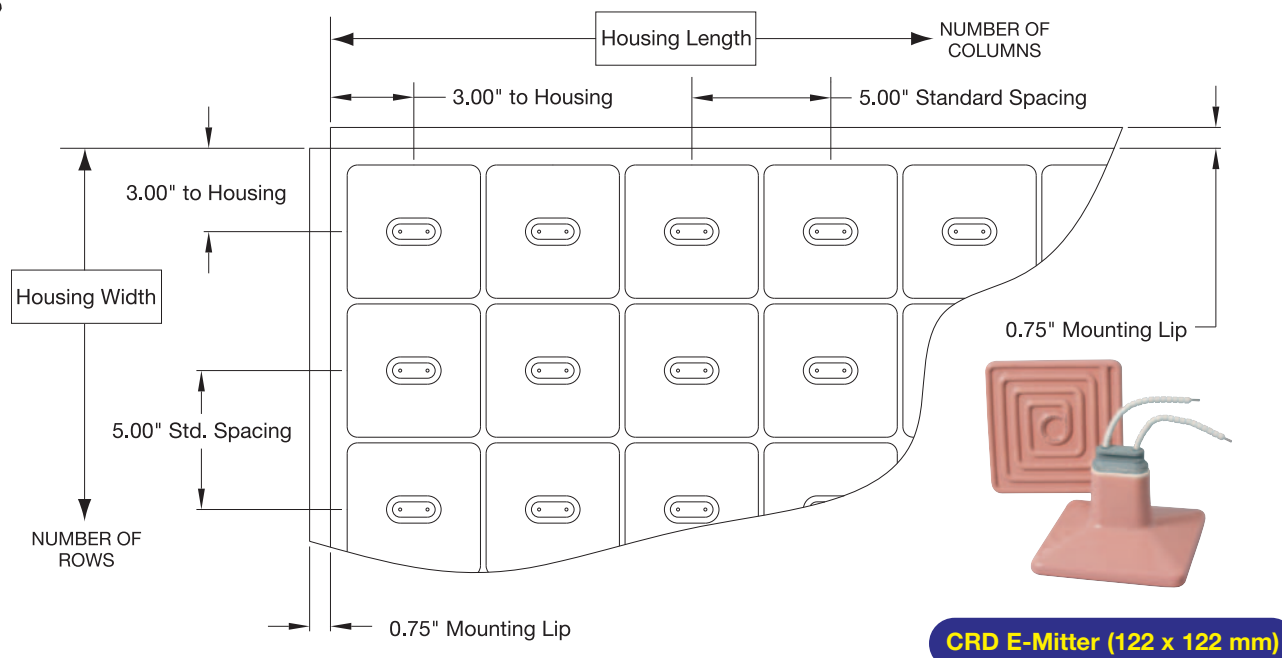
### Series CRD E-Mitter Panel Arrays Standard Style ARA Structural Housing Dimensions

- A) The Number of Rows will determine the Housing Width. For overall width add 1.50" (for the mounting lips).  
B) The Number of Columns will determine the Housing Length. For overall length add 1.50" (for the mounting lips).

Number of Rows	Number of Columns											
	1 W x L	2 W x L	3 W x L	4 W x L	5 W x L	6 W x L	7 W x L	8 W x L	9 W x L	10 W x L	11 W x L	12 W x L
1	6 x 6	6 x 11	6 x 16	6 x 21	6 x 26	6 x 31	6 x 36	6 x 41	6 x 46	6 x 51	6 x 56	6 x 61
2	11 x 6	11 x 11	11 x 16	11 x 21	11 x 26	11 x 31	11 x 36	11 x 41	11 x 46	11 x 51	11 x 56	11 x 61
3	16 x 6	16 x 11	16 x 16	16 x 21	16 x 26	16 x 31	16 x 36	16 x 41	16 x 46	16 x 51	16 x 56	16 x 61
4	21 x 6	21 x 11	21 x 16	21 x 21	21 x 26	21 x 31	21 x 36	21 x 41	21 x 46	21 x 51	21 x 56	21 x 61
5	26 x 6	26 x 11	26 x 16	26 x 21	26 x 26	26 x 31	26 x 36	26 x 41	26 x 46	26 x 51	26 x 56	26 x 61
6	31 x 6	31 x 11	31 x 16	31 x 21	31 x 26	31 x 31	31 x 36	31 x 41	31 x 46	31 x 51	—	—
7	36 x 6	36 x 11	36 x 16	36 x 21	36 x 26	36 x 31	36 x 36	36 x 41	36 x 46	—	—	—
8	41 x 6	41 x 11	41 x 16	41 x 21	41 x 26	41 x 31	41 x 36	41 x 41	—	—	—	—
9	46 x 6	46 x 11	46 x 16	46 x 21	46 x 26	46 x 31	46 x 36	—	—	Dimensions are in inches		
10	51 x 6	51 x 11	51 x 16	51 x 21	51 x 26	51 x 31	—	—	—			
11	56 x 6	56 x 11	56 x 16	56 x 21	56 x 26	—	—	—	—	—	—	—
12	61 x 6	61 x 11	61 x 16	61 x 21	61 x 26	—	—	—	—	—	—	—



**Note:** Structural Housing Dimensions (width x length) are in inches.  
For overall dimensions add 0.75" per side for the mounting lip.



### Custom Engineered/Manufactured Panels

- Multiple panels are used for larger arrays.
- Consult factory for larger panels not shown in table or custom panels with other spacings. Minimum spacing for CRD heaters is 5.00" x 5.00".
- Special narrow panels having a maximum 25 rows x 1 or 2 columns, & up to 8 rows x 9 columns can be made on special order (max. housing size 121" x 26").

**We welcome your inquiries.**  
**Take advantage of Tempco's economical approach to manufacturing panels.**

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## Ordering Information

### ARA Array Panel Design Worksheet for Ceramic E-Mitters

#### Ordering Information

To process your order or quotation,  
please specify the following information.

#### 1.) Supply panel layout or sketch showing:

- Outside panel dimensions (allow for 0.75" wide mounting lip on all sides of ARA structural array housing)
- Heater type and orientation of long (or short) heater dimension
- Layout of rows and columns with number of heaters
- Spacing of rows and columns (Tempco will use standard spacing unless specified by customer)
- Zones and/or number of heaters per zone
- Locations of input wiring
- Locations of heaters with thermocouples (if used)

#### 2.) Electrical requirements:

- Total panel KW \_\_\_\_\_
- Zone KWs (or # of heaters in zones) \_\_\_\_\_
- Line voltage to panel, # of circuits & 1 or 3 phase operation \_\_\_\_\_
- If 480V, can series-parallel wiring and 240V heaters be used? \_\_\_\_\_
- Type of heater control to be used \_\_\_\_\_

#### 3.) Heater specifications:

- E-Mitter Style ☐ CRB ☐ CRC ☐ CRG ☐ CRN ☐ CRZ ☐ CRD ☐ CRH ☐ CRL ☐ CRM
- Catalog Part Number \_\_\_\_\_ or Watts \_\_\_\_\_ Volts \_\_\_\_\_ Color for all heaters (T/C & non-T/C types) \_\_\_\_\_
- Standard K thermocouple or optional J \_\_\_\_\_ Quantity \_\_\_\_\_
- Heater lead configuration (Standard is 3.5" ceramic beads with spade terminals if factory wired)  
Special terminals if required \_\_\_\_\_

#### 4.) Panel wiring & control options:

- ☐ Standard unit wiring is heaters to terminal blocks only
- ☐ Factory wired per customer specs and wiring diagram
- ☐ Tempco Engineering to design internal wiring and determine line input requirements
- ☐ Tempco to supply turnkey power control panel(s)

#### 5.) Any special features required? \_\_\_\_\_

#### 6.) Application data:

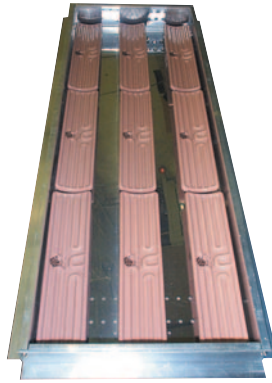
- Type of application and physical properties of processed materials \_\_\_\_\_

 **WARNING:** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

### ARA Array Housing Assemblies for Any Style Ceramic E-Mitter



17.5 KW 380V 4-Zone  
CRH E-Mitters



9 KW 480V 3-Zone  
3 x 3 CRB E-Mitters



4 Rows CRH E-Mitters  
4 Rows CRZ E-Mitters (at ends)



### There Is No Substitute For Our Experience

*Complete, made-to-order infrared heating systems – including the power and process temperature control panel – are available. Our team of professionals will assist you from concept to design/manufacturing. We Welcome Your Inquiries.*

### Assembly and Wiring of a Custom E-Mitter Panel



### Power/Temperature Control Panels



**Note:** See pages 13-56 through 13-63 for more information on Power and Temperature Control Panels.

### Design Features

- \* Solid state or mechanical load switching
- \* Temperature control
- \* Over-temperature control — A second thermocouple senses for over-temperature, shutting down the system while activating a signal light or optional alarm horn. Solid State controls and mechanical contactors can fail in the on position so it is very important to have this safety backup feature.
- \* Control circuit transformer with primary and secondary fusing
- \* NEMA 12 enclosure — NEMA 1 construction
- \* Manual disconnect switch with interlocking operating mechanism so power must be off in order to open cabinet
- \* Cooling fan and filter for solid state units
- \* Wiring diagram, parts list and operating instructions