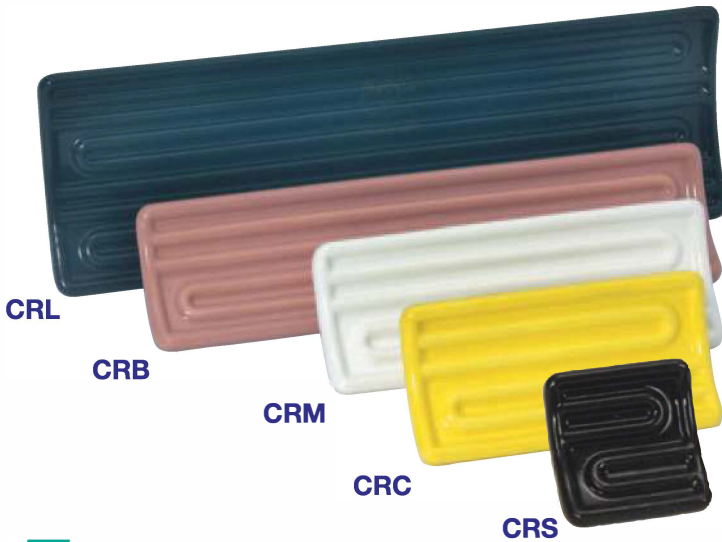


Ceramic E-Mitters

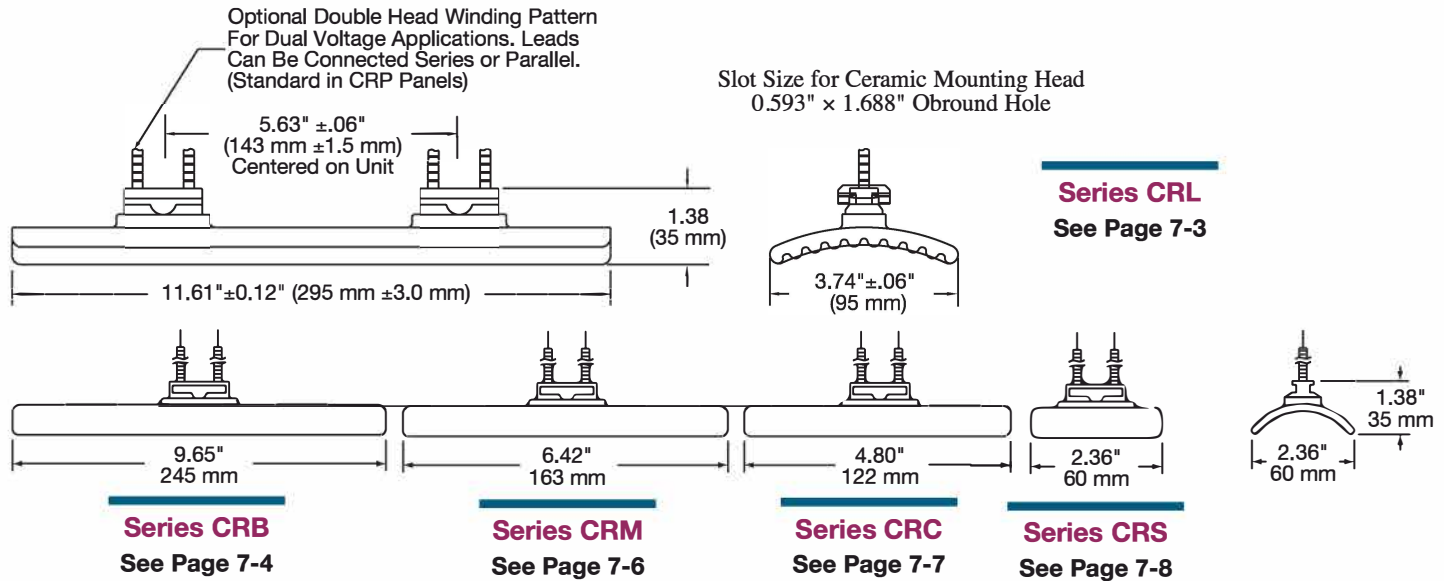
Series CRL, CRB, CRM, CRC and CRS Curved Face Ceramic E-Mitters



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. Type J thermocouple is also available. Low noise options are 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 6 μ m infrared radiation wavelength

5 Standard Solid Curved Face sizes to accommodate a wide range of new or existing applications



Ordering Information

Standard Heaters

Order by Part Number for Standard (Non-Stock) heaters.

Semi-Finished Stock CRB and CRC heaters ship in five business days. A Part Number will be assigned at time of order.

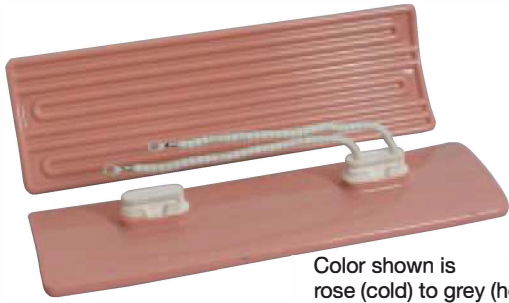
Custom Engineered/Manufactured Heaters

Understanding that an electric heater can be very application specific, for sizes and ratings not listed, TEMPCO can manufacture a Ceramic E-Mitter to meet your requirements. **Standard lead time is 3 weeks.**

Please Specify the following:

- Colors:** Standard are metamorphing rose and straight white, optional are metamorphing yellow and straight black
- Wattage:** Up to 43w/in² (6.7w/cm²)
- Voltage:** 120, 208, 240, 277, 480 and others (dependent on design)
- Thermocouple:** Standard Type K (Type J optional) or Low Noise Type K (Type J optional)
- Additional Options:** Start on page 7-20

Series CRL Curved Face Ceramic E-Mitters – Size: 95 mm × 295 mm (3.74" × 11.61")



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) CRL E-Mitters

E-Mitters listed have 6" ceramic bead insulated leads, #8-10 spade terminals, and one-piece spring clips for mounting in 20 or 22 gauge sheet metal.

Wattage	Voltage	Color	Watt Density*		Heater Body Temp.**		Peak Emitted Wavelength***	Part Number		
			(W/in ²)	(W/cm ²)	°F	°C		Without Thermocouple	Standard Type K Thermocouple	Low Noise Type K Thermocouple
500	120	Yellow to Orange	11.9	1.9	796	424	4.15	CRL20021	—	CRL20022
500	220-240	Rose to Grey	11.9	1.9	796	424	4.15	CRL10009	CRL10010	—
500	220-240	White	11.9	1.9	796	424	4.15	CRL00009	CRL00010	—
500	240/480	Yellow to Orange	11.9	1.9	796	424	4.15	CRL20023	—	CRL20024
750	120/240	Yellow to Orange	17.9	2.8	956	513	3.68	CRL20025	—	CRL20026
750	220-240	Rose to Grey	17.9	2.8	956	513	3.68	CRL10011	CRL10012	—
750	220-240	White	17.9	2.8	956	513	3.68	CRL00011	CRL00012	—
750	240/480	Yellow to Orange	17.9	2.8	956	513	3.68	CRL20027	—	CRL20028
950	220-240	Rose to Grey	22.7	3.5	1053	567	3.45	CRL10001	CRL10002	—
950	220-240	White	22.7	3.5	1053	567	3.45	CRL00001	CRL00002	—
1000	220-240	Rose to Grey	23.9	3.7	1076	580	3.40	CRL10013	CRL10014	—
1000	220-240	White	23.9	3.7	1076	580	3.40	CRL00013	CRL00014	—
1000	240/480	Yellow to Orange	23.9	3.7	1076	580	3.40	CRL20029	—	CRL20030
1150	220-240	Rose to Grey	27.5	4.3	1145	618	3.25	CRL10003	CRL10004	—
1150	220-240	White	27.5	4.3	1145	618	3.25	CRL00003	CRL00004	—
1250	240/480	Yellow to Orange	29.9	4.6	1191	644	3.16	CRL20031	—	CRL20032
1400	480	Rose to Grey	33.5	5.2	1262	683	3.03	CRL10015	CRL10016	—
1400	480	White	33.5	5.2	1262	683	3.03	CRL00015	CRL00016	—
1500	240/480	Yellow to Orange	35.9	5.6	1308	709	2.95	CRL20033	—	CRL20034
1600	480	Rose to Grey	38.2	5.9	1351	733	2.88	CRL10017	CRL10018	—
1600	480	White	38.2	5.9	1351	733	2.88	CRL00017	CRL00018	—
1800	480	Rose to Grey	43.0	6.7	1418	770	2.78	CRL10019	CRL10020	—
1800	480	White	43.0	6.7	1418	770	2.78	CRL00019	CRL00020	—

NOTES: All dual voltage heaters have two windings (parallel connected for the lower voltage & series connected for the higher voltage). Single voltage heaters are single winding designs.

Units with an internal “low noise” style thermocouple have 12" leads (see page 7-14). Standard type “K” T/C units also available.

Heaters with yellow to orange color are exact replacements for heaters in CRP Modular 12 × 12 CRP Radiant Panels on page 7-24.

* **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.

*** **Peak infrared radiation wavelength** as calculated from Wien's Law, for operating temperature shown. Expressed in microns (μm).

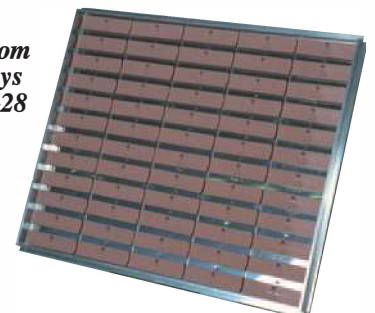
Custom Heater Assemblies & Power Control Panels



Type CRA Custom Linear Arrays
start on page 7-18



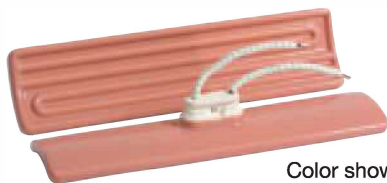
Type ARA Custom Structural Arrays
start on page 7-28



Array Power/Temperature Control Panels (see page 7-37)

Series CRB E-Mitters

Series CRB Curved Face Ceramic E-Mitters – Size: 60 mm × 245 mm (2.36" × 9.65")



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) CRB 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 ²)	(W/cm ²)	(Typical Operating) °F	°C	Without Thermocouple	With Type K Thermocouple
150	220/240	Rose to Grey	6.48	1.00	560	293	CRB10216	CRB10217
150	220/240	White	6.48	1.00	560	293	CRB00216	CRB00217
250	220/240	Rose to Grey	10.80	1.67	756	402	CRB10006	CRB10008
250	220/240	White	10.80	1.67	756	402	CRB00006	CRB00008
400	220/240	Rose to Grey	17.27	2.68	942	506	CRB10014	CRB10016
400	220/240	White	17.27	2.68	942	506	CRB00014	CRB00016
650	120	Rose to Grey	28.07	4.35	1156	624	CRB10020	CRB10022
650	120	White	28.07	4.35	1156	624	CRB00020	CRB00022
650	220/240	Rose to Grey	28.07	4.35	1156	624	CRB10023	CRB10025
650	220/240	White	28.07	4.35	1156	624	CRB00023	CRB00025
650	480	Rose to Grey	28.07	4.35	1156	624	CRB10088	CRB10165
650	480	White	28.07	4.35	1156	624	CRB00088	CRB00165
1000	120	Rose to Grey	43.18	6.69	1420	771	CRB10028	CRB10030
1000	120	White	43.18	6.69	1420	771	CRB00028	CRB00030
1000	220/240	Rose to Grey	43.18	6.69	1420	771	CRB10031	CRB10033
1000	220/240	White	43.18	6.69	1420	771	CRB00031	CRB00033
1000	480	Rose to Grey	43.18	6.69	1420	771	CRB10089	CRB10045
1000	480	White	43.18	6.69	1420	771	CRB00089	CRB00045

Semi-Finished Stock CRB E-Mitters (Five Business Day Manufacturing)

Semi-Finished Series CRB E-Mitters listed below are stocked ready for color glazing. Colors available are metamorphing rose (cold) to grey (hot), traditional white, metamorphing yellow (cold) to orange (hot), and black.

They can be terminated with beaded leads up to 6" long with spliced-on lead wire for lengths beyond 6" and straight, ring, or spade terminals. Some are available with a thermocouple (any length).

A part number will be assigned at time of order.

Wattage	Voltage	Watt Density*		Heater Body**		Optional Thermocouple (Any Length)
		(W/in ²)	(W/cm ²)	Temperature (Typical) °F	°C	
400	230	17.27	2.68	942	506	N/A
650	230	28.07	4.35	1156	624	Type K
650	480	28.07	4.35	1156	624	N/A
1000	230	43.18	6.69	1420	771	Type K
1000	480	43.18	6.69	1420	771	Type J or K

CRB Ordering Information (See page 7-2)

Series CRB Curved Face Ceramic E-Mitter Specifications

**Series CRB – Size: 60 mm × 245 mm (2.36" × 9.65")
Watts/Square Inch vs. Temperature Data**

Watts	Surface W/in ² *	Heater Body °F Rise	Heater Body Temp @ 72°F**	Primary Emitted Wavelength*** (μm)
100	4.32	357	429	5.87
125	5.40	426	498	5.45
150	6.48	488	560	5.11
163	7.04	518	590	4.97
200	8.64	596	668	4.63
250	10.80	684	756	4.29
300	12.95	756	828	4.05
325	14.03	788	860	3.95
350	15.11	817	889	3.87
400	17.27	870	942	3.72
500	21.59	960	1032	3.50
600	25.91	1043	1115	3.31
650	28.07	1084	1156	3.23
700	30.23	1126	1198	3.15
750	32.39	1169	1241	3.07
800	34.55	1211	1283	2.99
875	37.78	1271	1343	2.89
900	38.86	1290	1362	2.86
1000	43.18	1348	1420	2.78

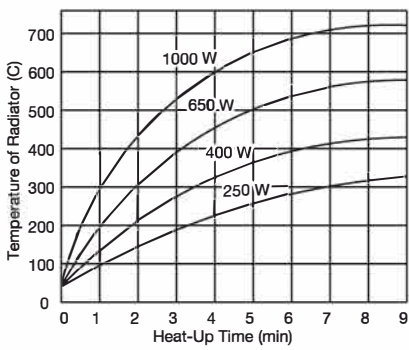
* **Watt density** calculated using heater face surface area.

** **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.

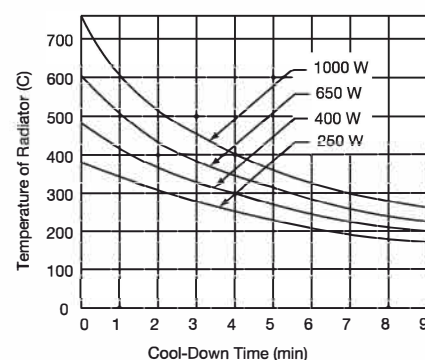
*** **Peak infrared radiation wavelength** as calculated from Wien's Law, for operating temperature shown. Expressed in microns (μm).

Typical Heating and Cooling Behavior of CRB Ceramic E-Mitters

Warm-Up Time Graph



Cool-Down Time Graph





Series CRM E-Mitters

Series CRM Curved Face Ceramic E-Mitters – Size: 60 mm × 163 mm (2.36" × 6.42")



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) CRM 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 ²)	(W/cm ²)	(Typical Operating) °F	°C	Without Thermocouple	With Type K Thermocouple
425	120	Rose to Grey	27.44	4.25	1144	618	CRM10008	CRM10011
425	120	White	27.44	4.25	1144	618	CRM00008	CRM00011
500	120	Rose to Grey	32.28	5.00	1239	671	CRM10009	CRM10012
500	120	White	32.28	5.00	1239	671	CRM00009	CRM00012
600	220/240	Rose to Grey	38.74	6.00	1360	738	CRM10010	CRM10013
600	220/240	White	38.74	6.00	1360	738	CRM00010	CRM00013

Series CRM Curved Face Ceramic E-Mitter Specifications

Series CRM – Size: 60 mm × 163 mm (2.36" × 6.42")

Watts/Square Inch vs. Temperature Data

Watts	Surface W/in ² *	Heater Body °F Rise	Heater Body Temp @ 72°F**	Primary Emitted Wavelength*** (µm)
100	6.46	487	559	5.12
150	9.68	641	713	4.45
200	12.91	755	827	4.05
250	16.14	843	915	3.79
300	19.37	915	987	3.60
350	22.60	979	1051	3.45
400	25.82	1041	1113	3.32
450	29.05	1103	1175	3.19
500	32.28	1167	1239	3.07
550	35.51	1230	1302	2.96
600	38.74	1288	1360	2.87
650	41.96	1335	1407	2.79

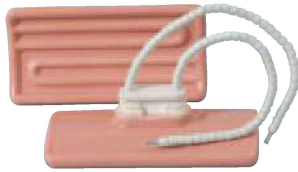
* **Watt density** calculated using heater face surface area.

** **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.

*** **Peak infrared radiation wavelength** as calculated from Wien's Law, for operating temperature shown. Expressed in microns (µm).

CRM Ordering Information (See page 7-2)

Series CRC Curved Face Ceramic 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) CRC 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 ²)	(W/cm ²)	(Typical Operating) °F	°C	Without Thermocouple	With Type K Thermocouple
125	220/240	Rose to Grey	10.80	1.67	756	402	CRC10005	CRC10007
125	220/240	White	10.80	1.67	756	402	CRC00005	CRC00007
200	220/240	Rose to Grey	17.27	2.68	942	506	CRC10013	CRC10015
200	220/240	White	17.27	2.68	942	506	CRC00013	CRC00015
325	120	Rose to Grey	28.07	4.35	1156	624	CRC10018	CRC10020
325	120	White	28.07	4.35	1156	624	CRC00018	CRC00020
325	220/240	Rose to Grey	28.07	4.35	1156	624	CRC10021	CRC10023
325	220/240	White	28.07	4.35	1156	624	CRC00021	CRC00023
325	480	Rose to Grey	28.07	4.35	1156	624	CRC10064	CRC10140
325	480	White	28.07	4.35	1156	624	CRC00064	CRC00140
500	120	Rose to Grey	43.18	6.69	1420	771	CRC10024	CRC10026
500	120	White	43.18	6.69	1420	771	CRC00024	CRC00026
500	220/240	Rose to Grey	43.18	6.69	1420	771	CRC10027	CRC10029
500	220/240	White	43.18	6.69	1420	771	CRC00027	CRC00029
500	480	Rose to Grey	43.18	6.69	1420	771	CRC10066	CRC10141

Semi-Finished Stock CRC E-Mitters (Five Business Day Manufacturing)

Semi-Finished Series CRC E-Mitters listed below are stocked ready for color glazing. Colors available are metamorphing rose (cold) to grey (hot), traditional white, metamorphing yellow (cold) to orange (hot), and black.

They can be terminated with beaded leads up to 6" long with spliced-on lead wire for lengths beyond 6" and straight, ring, or spade terminals. Some are available with a thermocouple (any length).

A part number will be assigned at time of order.

Wattage	Voltage	Watt Density*		Heater Body** Temperature (Typical)		Optional Thermocouple (Any Length)
		(W/in ²)	(W/cm ²)	°F	°C	
200	230	17.27	2.68	942	506	Type K
325	230	28.07	4.35	1156	624	Type K
325	480	28.07	4.35	1156	624	N/A
500	230	43.18	6.69	1420	771	Type K
500	480	43.18	6.69	1420	771	N/A

CRC Ordering Information (See page 7-2)

CONTINUED →

Series CRC Curved Face Ceramic E-Mitter Specifications

Continued from previous page...

Series CRC Curved Face Ceramic E-Mitters – Size: 60 mm × 122 mm (2.36" × 4.80")

Watts/Square Inch vs. Temperature Data

Watts	Surface W/in ² *	Heater Body °F Rise	Heater Body Temp @ 72°F**	Primary Emitted Wavelength*** (μm)
100	8.64	596	668	4.63
125	10.80	684	756	4.29
150	12.95	756	828	4.05
163	14.08	789	861	3.95
200	17.27	870	942	3.72
250	21.59	960	1032	3.50
300	25.91	1043	1115	3.31
325	28.07	1084	1156	3.23
350	30.23	1126	1198	3.15
375	32.39	1169	1241	3.07
400	34.55	1211	1283	2.99
500	43.18	1348	1420	2.78

Series CRS Curved Face Ceramic E-Mitters – Size: 60 mm × 60 mm (2.36" × 2.36")



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)

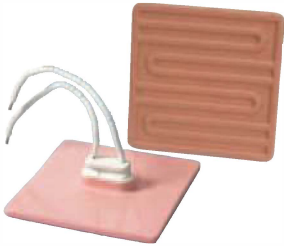
Standard (Non-Stock) CRS E-Mitters

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*		Part Number	
			(W/in ²)	(W/cm ²)	Without Thermocouple	With Type K Thermocouple
162	120	White	28.07	4.35	CRS00002	CRS00009
162	220/240	White	28.07	4.35	CRS00005	CRS00012
250	120	White	43.18	6.69	CRS00003	CRS00010
250	220/240	White	43.18	6.69	CRS00006	CRS00013

CRS Ordering Information (See page 7-2)

Series CRG Flat Face Ceramic 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) CRG E-Mitters

E-Mitters listed have 3-1/2" ceramic bead insulated leads, #8-10 spade terminals, and a one-piece spring clip for mounting in 20 or 22 gauge sheet metal.

Wattage	Voltage	Color	Watt Density*		Heater Body Temp.**		Part Number	
			(W/in ²)	(W/cm ²)	(Typical Operating) °F	°C	Without Thermocouple	With Type K Thermocouple
250	220/240	Rose to Grey	10.9	1.7	758	403	CRG10026	CRG10027
250	220/240	White	10.9	1.7	758	403	CRG00026	CRG00027
325	220/240	Rose to Grey	14.1	2.2	862	461	CRG10028	CRG10029
325	220/240	White	14.1	2.2	862	461	CRG00028	CRG00029
400	220/240	Rose to Grey	17.4	2.7	944	507	CRG10030	CRG10031
400	220/240	White	17.4	2.7	944	507	CRG00030	CRG00031
650	220/240	Rose to Grey	28.2	4.4	1159	626	CRG10032	CRG10033
650	220/240	White	28.2	4.4	1159	626	CRG00032	CRG00033
800	220/240	Rose to Grey	34.7	5.4	1287	697	CRG10034	CRG10035
800	220/240	White	34.7	5.4	1287	697	CRG00034	CRG00035
1000	220/240	Rose to Grey	43.4	6.7	1422	772	CRG10036	CRG10037
1000	220/240	White	43.4	6.7	1422	772	CRG00036	CRG00037

Series CRG Flat Face Ceramic E-Mitter Specifications

Watts/Square Inch vs. Temperature Data

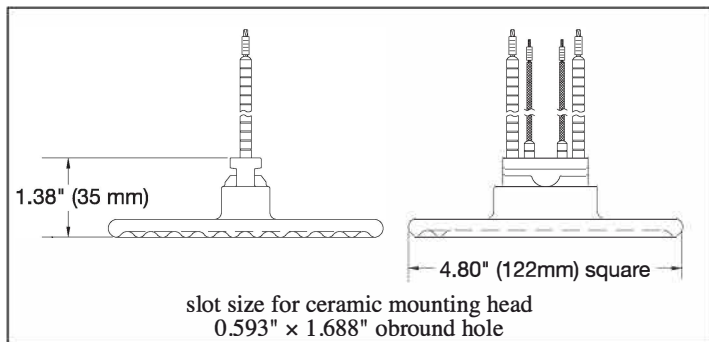
Watts	Surface W/in ² *	Heater Body °F Rise	Heater Body Temp @ 72°F**	Primary Emitted Wavelength*** (μ)
250	10.9	686	758	4.28
325	14.1	790	862	3.95
400	17.4	872	944	3.72
650	28.2	1087	1159	3.22
800	34.7	1215	1287	2.99
1000	43.4	1350	1422	2.77

* **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.

*** **Peak infrared radiation wavelength** as calculated from Wien's Law, for operating temperature shown. Expressed in microns (μm).

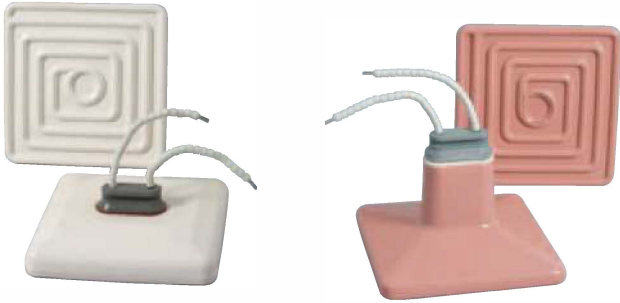
Series CRG Dimensions



CRG Ordering Information
See page 7-2

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)

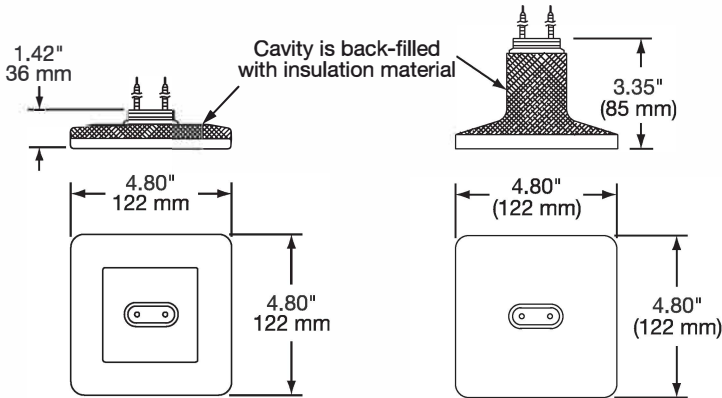
CRH and CRD E-Mitter Construction

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*

Slot size for ceramic mounting heads
0.593" X 1.688" oblong hole



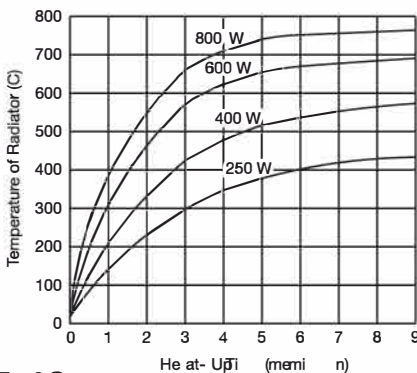
Series CRH Dimensions

Series CRD Dimensions

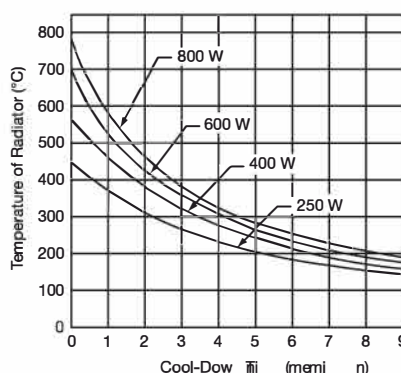
Optional Features

- * *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)*

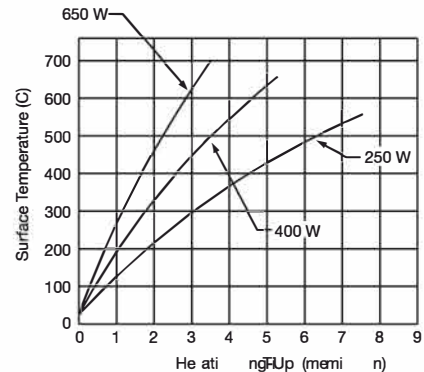
Warm-up Curve
CRH Short Shaft



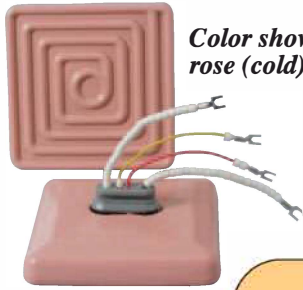
Cool-Down Curve
CRH Short Shaft



Warm-up Curve
CRD Long Shaft



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 ²)	(W/cm ²)	(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 ²)	(W/cm ²)	(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.

Ordering Information

Standard Heaters

Order by Part Number for Standard (Non-Stock) heaters.

Custom Engineered/Manufactured Heaters

Understanding that an electric heater can be very application specific, for sizes and ratings not listed, **TEMPCO** can manufacture a CRH or CRD E-Mitter to meet your requirements. **Standard lead time is 3 weeks.**

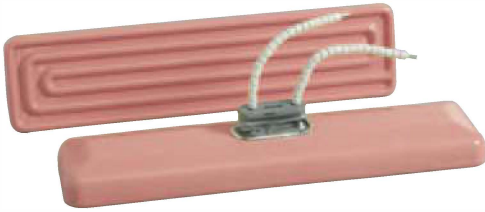
Please Specify the following:

- Size:** CRH or CRD
- Colors:** Standard are metamorphing rose and straight white, optional are metamorphing yellow and straight black
- Wattage:** Up to 35w/in² (5.4w/cm²)
- Voltage:** 120, 208, 240, 277, 480 and others (dependent on design)
- Thermocouple:** Standard Type K or optional Type J
- Additional Options:** Start on page 7-20
- Description of Process & Temperature**

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

CRN, CRZ E-Mitters

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



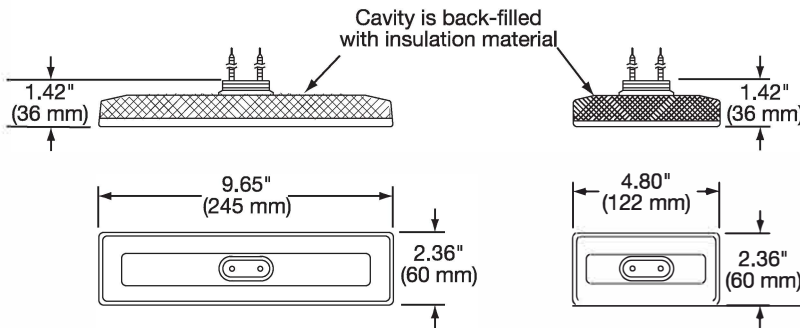
Design Features

- * Universal mount designed to be dropped into existing systems regardless of manufacturer.
- * Standard colors are metamorphosing rose (cold) to grey (hot), and traditional white. Optional colors are metamorphosing 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 μ m infrared radiation wavelength

Series CRN Dimensions

Series CRZ Dimensions

Slot size for ceramic mounting heads
0.593" X 1.688" obround hole



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.

Ordering Information

Standard Heaters

Order by Part Number for Standard (Non-Stock) heaters.

Custom Engineered/Manufactured Heaters

Understanding that an electric heater can be very application specific, for sizes and ratings not listed, **TEMPCO** can manufacture a CRN or CRZ E-Mitter to meet your requirements. **Standard lead time is 3 weeks.**

Please Specify the following:

- Size:** CRN or CRZ
- Colors:** Standard are metamorphosing rose and straight white, optional are metamorphosing yellow and straight black
- Wattage:** Up to 35w/in² (5.4w/cm²)
- Voltage:** 120, 208, 240, 277, 480 and others (dependent on design)
- Thermocouple:** Standard Type K or optional Type J
- Additional Options:** Start on page 7-20

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

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



Optional Features

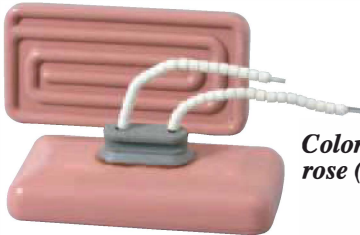
- * *Additional Power or Thermocouple Lead Lengths (page 7-23)*
- * *Two-Piece Wave Mounting Clip (page 7-14)*
- * *Reflectors and Other Accessories (pages 7-20 through 7-23)*
- * *Arrays and Power/Temperature Control Panels (start on page 7-15)*

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 ²)	(W/cm ²)	(Typical Operating) °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 ²)	(W/cm ²)	(Typical Operating) °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.

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

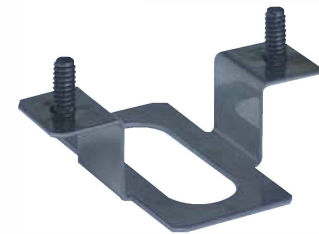
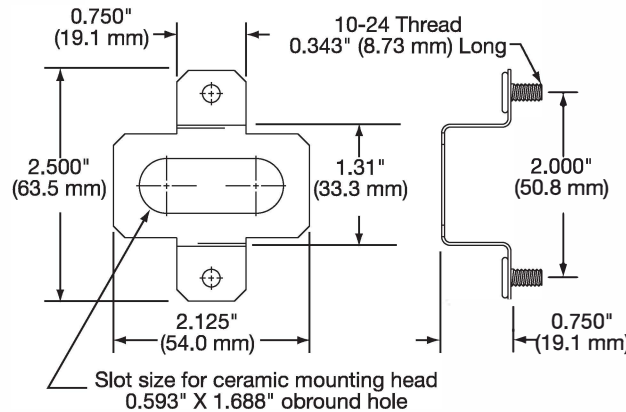
A convenient method for mounting individual E-Mitters to a flat surface or panel for spot heating applications

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

7-14

Rev 1 (10-13)

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.



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.

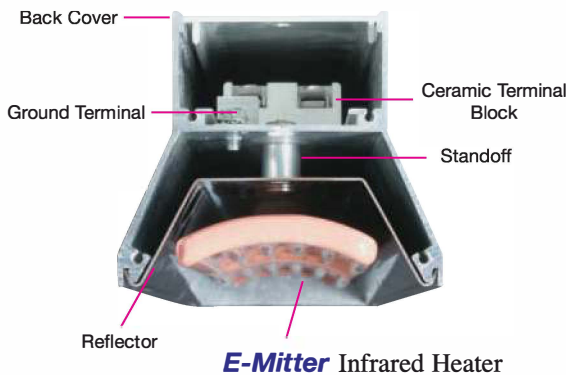
WARNING: Do not use Copper Wire to make connections inside this heater. High temperatures will oxidize copper. Use of nickel plated or nickel clad insulated copper wire is recommended. Wire insulation rating must be suitable for the ambient temperature of the wiring installation.

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)

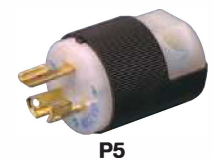
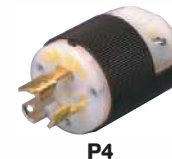
- Stainless steel armor cable** — 18" armor cable over 24" leads
 - Galvanized armor cable** — 18" armor cable over 24" leads
 - Stainless steel wire braid** — 18" wire braid over 24" leads
 - Fiberglass leads (450°C rating)** — 12" long plain leads
- If longer leads and/or longer armor cable are required, 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.

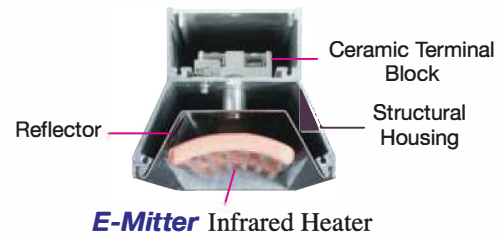
Custom CRA Linear Heater Assemblies Using Standard Components

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.

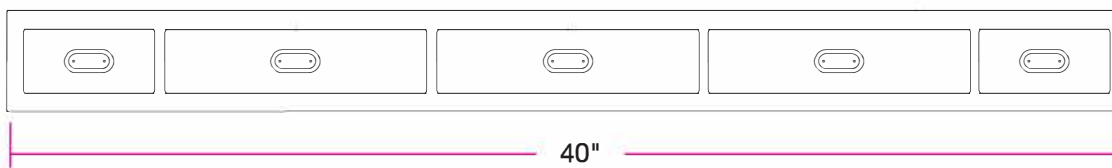
Step 2) Select the E-Mitters Series. The CRK Housing Lengths Table gives the various possible E-Mitter configurations that will fit the housing selected. A combination of CRBs and CRCs will be used for this application. CRB E-Mitters were selected for the inside three heaters to limit the number of unheated 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^2 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.

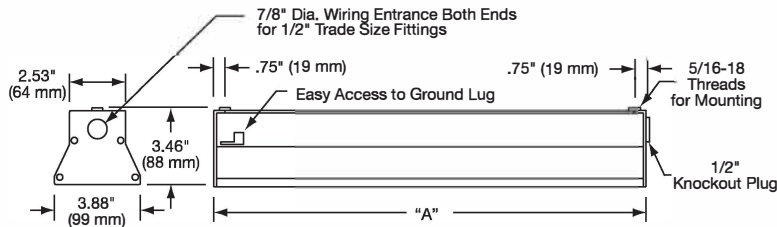
CRC10021 CRB10031 CRB10033 (has T/C) CRB10031 CRC10021



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	"A" Dim. 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.

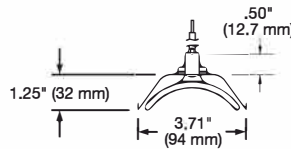
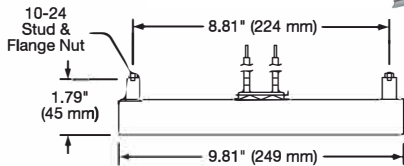
CRA Linear Heater Components

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



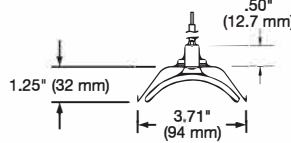
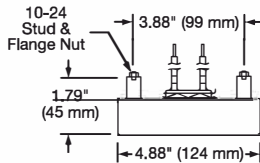
Reflectors for Ceramic E-Mitters

- * 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).



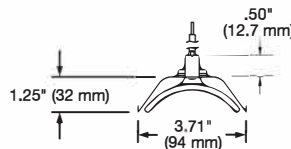
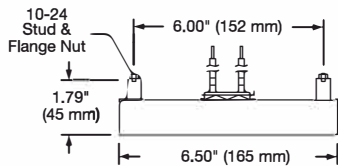
For One CRB E-Mitter or One CRN E-Mitter

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



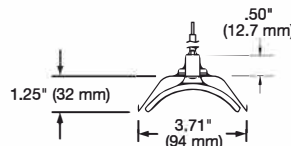
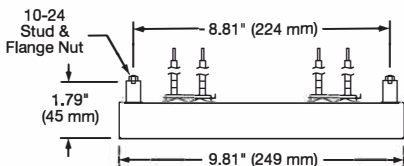
For One CRC E-Mitter or One CRZ E-Mitter

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



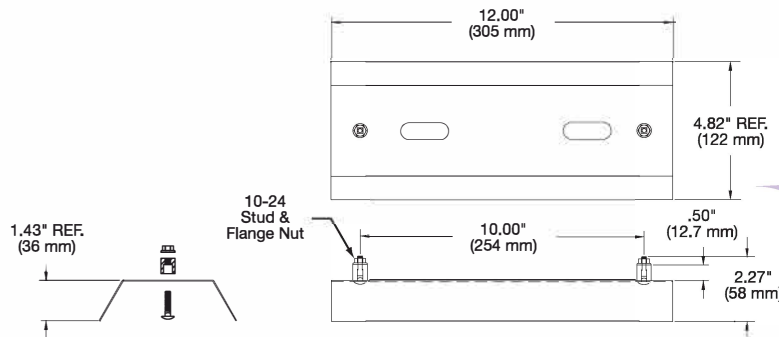
For One CRM E-Mitter

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.

Ceramic Twist-Loc Wire Connectors

Porcelain Material, Maximum Temperature Rating 1200°F (645°C), 300V Maximum

Agency Approvals: UL and CSA for EHD-114-102, EHD-114-103 and EHD-114-104 (UL File E9809)

Stock Number	MFR Part Number	Wire Range (Solid or Stranded Wire)		Skirt Length	Opening ID	Outer Diameter
EHD-114-102	10-401	2#22	1#18 + 1#16	.687"	.250"	.406"
EHD-114-103	10-405	2#20	2#16	.750"	.312"	.484"
EHD-114-104	10-407	2#18	2#14	.843"	.406"	.531"
EHD-114-105	-	1#16 + 1#14	1#14 + 2#12	1.00"		



7-20

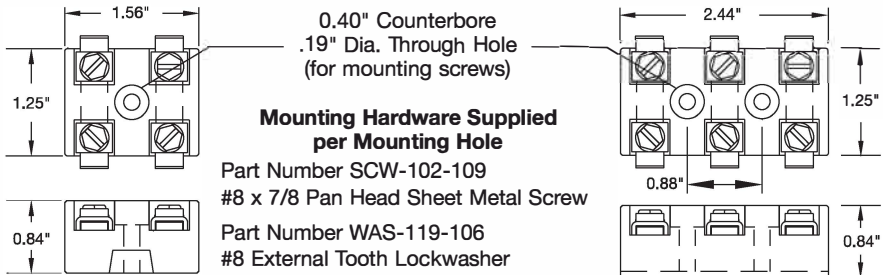
Rev 2 (7-2020)

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



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



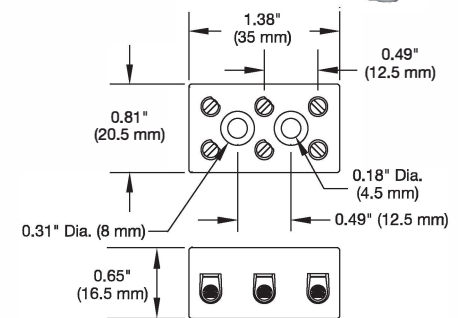
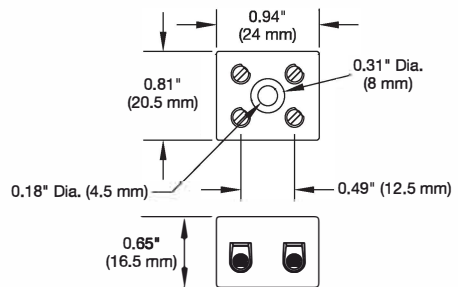
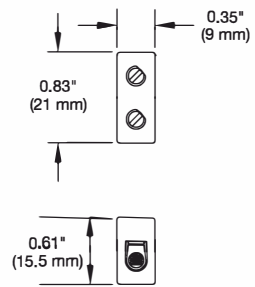
**Part Number:
EHD-108-116**



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

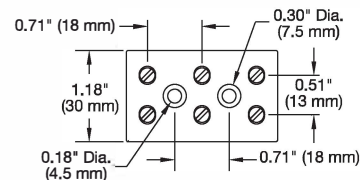
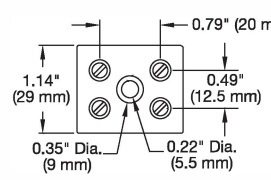


**Part Number:
EHD-108-118**



Design Features

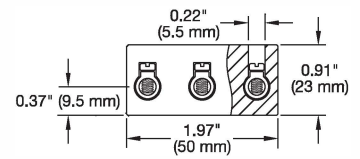
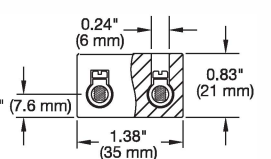
- * **Maximum Voltage:** 600 VAC
- * **Maximum Current:** 50 Amps
- * **Maximum Temperature:** 200°C/392°F
- * **AWG:** 14-8 ga wire
- * **Screw:** M4, zinc plated steel
- * **Terminal Body:** Nickel plated brass
- * **Body Material:** Porcelain
- * **Agency Approval:** UL, File # E69841



**Stock Number: EHD-108-114
MFR Part Number: 4010-B**



**Stock Number: EHD-108-115
MFR Part Number: 4011-B**



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

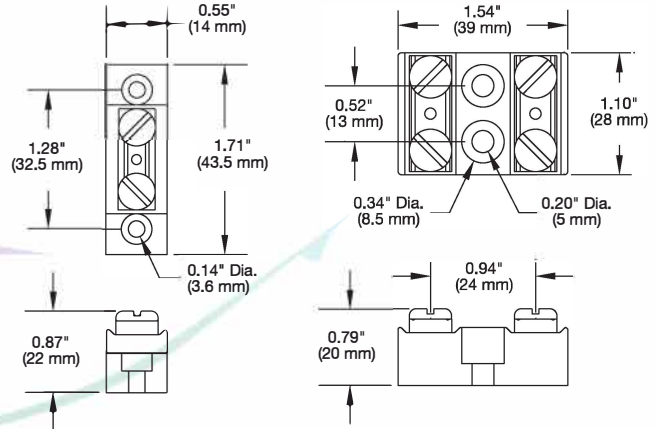
- * **Maximum Voltage:** 500 VAC
- * **Maximum Current:** 44 Amps @ 104°F ambient
- * **Maximum Temperature:** 240°C/464°F
- * **Wire Gauge:** 18 to 8 ga.
- * **Terminal Screw:** M4, zinc-plated steel
- * **Body Material:** Steatite
- * **Agency Approvals:** None

Optional Terminal Hardware

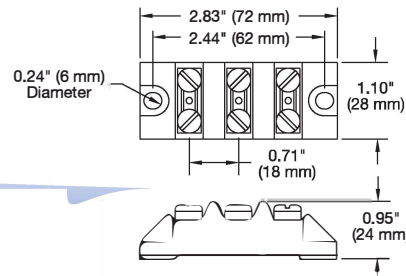
Stainless Steel Flat Washer — Part Number: WAS-109-101

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

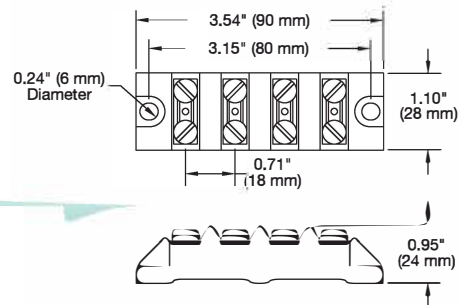
Part Number: EHD-108-106



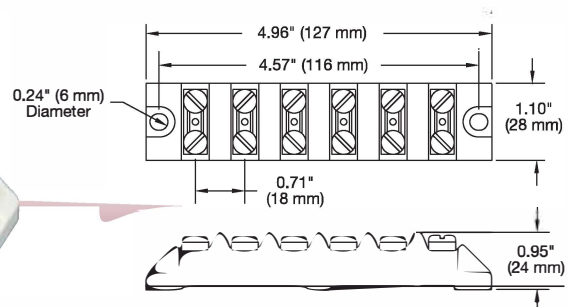
Part Number: EHD-108-107



Part Number: EHD-108-108



Part Number: EHD-108-109



Part Number: EHD-108-105



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
Spade	#8 stud, 22-18 ga. wire	Heater leads	TER-109-110*
	#8 stud, 16-14 ga. wire	Heater leads	TER-109-104
	#8 stud, 12-10 ga. wire	Line wiring of Assy.	TER-109-106
Straight	#10 stud, 22-18 ga. wire	Misc.	TER-115-111
	#8-10 stud, 22-18 ga. wire	Heater leads (Standard)	TER-115-112*
	#8 stud, 16-14 ga. wire	Internal CRA & ARA wiring	TER-115-113*
Straight	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 Miscellaneous Standard for internal wiring of factory wired units
450°C, 600V	16 ga. NCC	18.0 @ 300°C (572°F)	LDWR-1089	LDWR-1099	LDWR-1143	
450°C, 600V	14 ga. NCC	21.2 @ 300°C (572°F)	LDWR-1090	LDWR-1100	LDWR-1144	
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	
250°C, 600V	18 ga. NPC	9.0 @ 200°C (392°F)	LDWR-1093	LDWR-1103	LDWR-1147	Heater lead modifications Miscellaneous Internal panel wiring
250°C, 600V	16 ga. NPC	14.2 @ 200°C (392°F)	LDWR-1094	LDWR-1104	LDWR-1148	
250°C, 600V	14 ga. NPC	21.1 @ 200°C (392°F)	LDWR-1095	LDWR-1105	LDWR-1149	
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	

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.