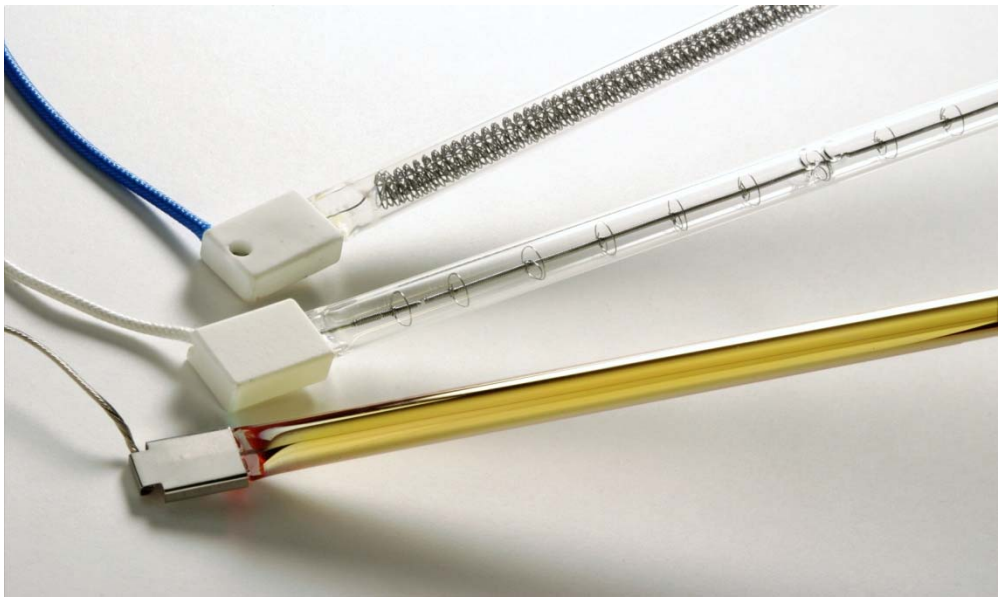
LampIR
INFRARED HEATERS

Infrared Lamps For Controlled Concentrated Heating

LampIR



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For use with the following Research Inc. heaters:

SpotIR

LineIR

StripIR

PanelIR

ChamberIR

Hi-TempIR

Lo-TempIR

SimulateIR

Applications

- Curing silicone medical tubing
- Drying ink-jet and other printing
- Soldering and desoldering components
- Local stress relieving
- Joining plastics or metals
- Line soldering
- Drying marking ink on electronic circuits
- Shrinking plastic caps onto containers
- Curing coatings on panels
- “Glossing” packaged cosmetics
- Drying and curing coating and adhesives on a variety of substrates
- Preheating plastics and metals prior to forming
- Solder reflowing
- Curing automotive hoses and tubing
- Curing coatings to adhesives on wire or cable
- Material testing at high temperatures
- Heat treating

Rev. 110708

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Features and Benefits - LampIR

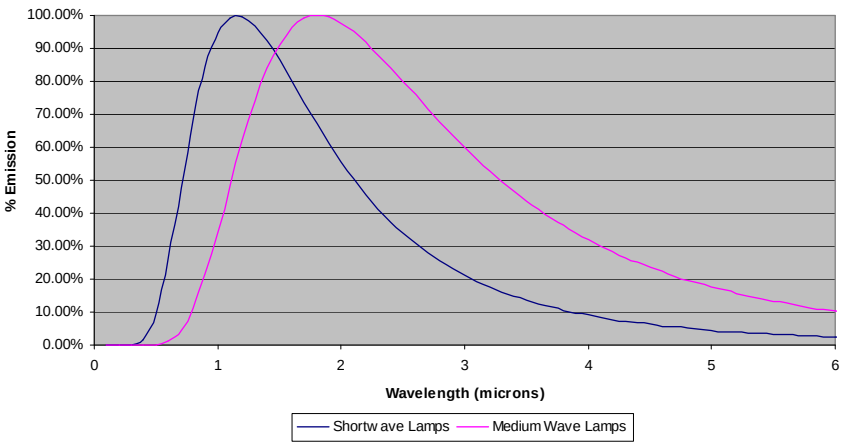
- Short wavelength (1.15 source peak wavelength) and Medium wavelength (1.8 source peak wavelength) lamps available to match heating requirements for many applications.
- Instant Response, yield 90 percent output within three seconds and dissipates 90 percent energy within five seconds.
- Non-contact electric heat source. Clean, efficient heat source does not contact product being heated.
- Energy generated heats desired target area without heating surrounding areas.
- Heat flux densities (100 watt/linear inch or in some instance 200 watt/inch) provide rapid heat transfer to target product.
- Repeatable results can be achieved for consistent process outputs.
- Long lamp life. Average lamp life of 5000 hours for most lamps.
- Range of lengths available in more than 45 sizes and styles with lighted lengths from 2 to 38 inches (51 to 965 mm).

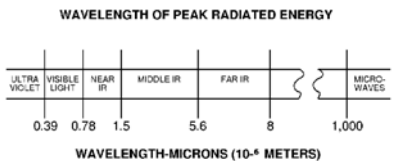
Product Description – LampIR

Research Inc. specifies tungsten filament halogen lamps in most of its heaters. Halogen gas is added to the inert lamp gas to increase the life of the lamp. As the filament operates, tungsten slowly evaporates from it and is combined with the halogen to create a tungsten halide. As the tungsten halide touches the filament, the heat separates the tungsten from the gas and re-deposits the tungsten back on the filament. The freed halogen gas then repeats the process again, creating the Halogen Cycle.

The graph shows the energy distribution for typical 100 watt per linear inch short wavelength and medium wavelength lamps. For both lamps the total energy generated (as represented by the area under the curve) is equal but the peak wavelength shifts between 1.15 microns for short wavelength to 1.80 microns for medium wavelength

Spectral Output of Some Radiant Sources





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Product Description LampIR continued

End Seals

Standard end seals are limited to a temperature of approximately 662ºF (350ºC). Operating lamps at temperatures above this level leads to oxidation, overheating, and eventual burnout. Cooling for lamp end seals is provided on some heaters to increase the times and temperatures at which they can be operated, and to extend lamp life.

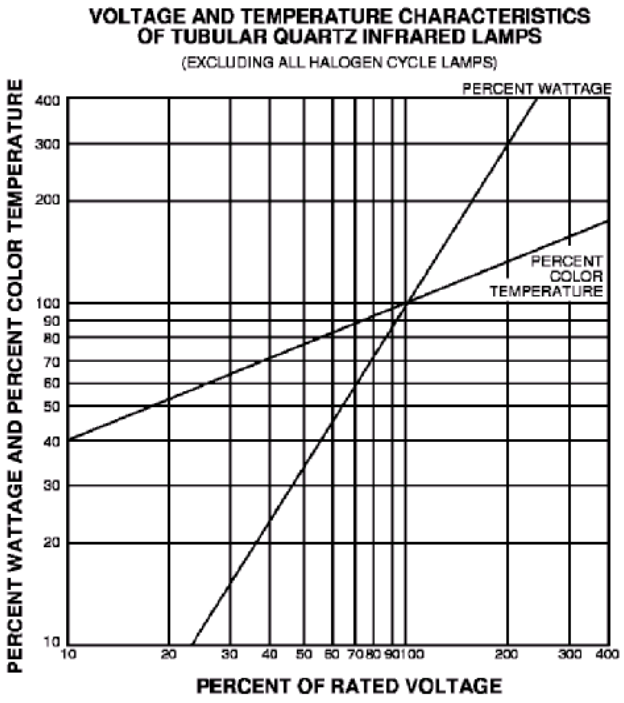
End seals for pigtail-lead lamps are available in metallic and ceramic versions. The metallic end seals have un-insulated leads, while the ceramic end seals have insulated leads. The ceramic end seals serves to protect the joint of each lamp-lead lamp emitter filament and the insulated leads are electrically isolated.

Lamp Orientation

Some lamps are intended to be operated in a horizontal position so that the filament is supported equally along its length. Shorter lamps can be operated in a vertical position because the filament will not sag and stress its upper section with its weight. Special vertical-burn lamps are available in longer lengths that have indentations in the quartz envelope that support individual filament spacers and prevent the filament from sagging when the lamps are operated vertically.

Operating Voltage

Each lamp has a rated voltage. Filament temperature, color temperature, peak wavelength, and total energy emissions can be controlled by adjusting the applied voltage above or below this rated value. Lamp power, which is measured in watts, is also a function of the applied voltage. Figure 5 shows the relationship between wattage and color temperature. Operating lamps at voltage levels in excess of the rated voltage will significantly reduce lamp life.



POWER DISSIPATION VS. VOLTAGE FORMULA

$$\frac{W_A}{W_R} = \left(\frac{V_A}{V_R}\right)^{1.54}$$

$$W_A = W_R \left(\frac{V_A}{V_R}\right)^{1.54}$$

W_A = Actual Power Dissipated, Watts
W_R = Rated Power, Watts
V_A = Lamp Voltage, Actual
V_R = Lamp Voltage, Rated

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Typical Applications - LampIR

Short Wavelength Lamps

These lamps are generally used in applications where a product is to be heated or cured (These lamps may be operated in horizontal or vertical orientations)

- Heat treating metals
- Annealing metals
- Spot welding metals and plastics
- Localized softening plastic for bending or forming
- Curing silicone and other rubber extrusions
- Limitations
    - ❖ Absorption of short wavelength is affected by product color. Black and dark colors absorb well.
    - ❖ Heating lighter colors may be more readily achieved with medium wavelength lamps.
    - ❖ Materials such as Teflon do not absorb short wavelength energy.
    - ❖ Most of the energy will pass through and heat whatever is behind the Teflon.

Medium Wavelength Lamps

- These lamps are generally used in applications where a surface needs to be heated.
- High speed drying water or solvent based ink.
- Removing water after coil coating
- Heating substances such as Teflon that do not absorb short wavelength
- Heating lighter colored surfaces
- Limitations
    - ❖ Medium wavelength does not penetrate as deeply into metals, plastics or rubber as short wavelength.
- These lamps may only be operated in a horizontal orientation.

Rapid Response

The lamps (both short wave length and medium wavelength) have a low mass tungston wire filament that heats immediately when voltage is applied. This low thermal mass allows the heaters to reach the operating temperature in 1 to 3 seconds when voltage is initially applied and to respond with the same rapidity when voltage is varied. This ability to change heat output almost instantaneously make them a superior choice in applications where operating conditions such as line speed can change rapidly and the heat must follow this change.

Long Lamp Life

Typical lamps will operate for 5000 hours at rated voltage. This predicted life will be affected by the actual voltage applied. Over voltage will significantly decrease the life and operating at less than rated voltage will increase the life.

All the lamps enclose the tungsten filament in a quartz envelope that is transparent to the infrared energy. It must be kept free of containments such as oil to prevent premature lamp failure. The quartz will not absorb the infrared but the oil contaminate will and the lamp envelope will heat in the area of contamination. Wiping the lamp down with a clean cloth and alcohol will eliminate the contamination.

EZ Eye Coating

Some models of the lamps may be purchased with EZ eye coating that substantially reduces the amount of visible light generated. The amount of usable power is not affected by this coating.

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Ordering Information-Lamps (2 lamps order minimum)

Model	Lighted Length	Overall Length	Rated Watts	Rated Volts	Average Life (Hours)	Color Temp. (K)	Lamp Description
Pigtail Lead Electrical Connection							
057541-001	5 (127)	8.81 (224)	500	120	5000	2500	500T3/CL
057541-003	6 (152)	8.81 (224)	1200	144	5000	2500	1200T3/CL
057544-003	6 (152)	8.81 (224)	1200	144	5000	2450	1200T3/CL/HT
057544-006	9.75 (248)	11.94 (303)	2000	240	5000	2450	2000T3/CL
057541-010	9.76 (248)	11.81 (300)	6000	480	1500	3150	6000T3/CL[1]
057541-002	10 (254)	11.94 (303)	1000	240	5000	2500	1000T3/CL
057544-002	10 (254)	13.81 (351)	1000	240	5000	2400	1000T3/CL/HT
057544-005	10 (254)	13.91 (503)	2000	240	3000	2650	2000T3/CL/HT
057541-004	16 (406)	19.91 (503)	1600	240	5000	2500	1600T3/CL[1]
057541-008	16 (406)	19.71 (500)	3000	240	5000	2500	3000T3/CL[1]
057541-009	16 (406)	17.94 (456)	3200	384	3000	2500	3200T3/CL[1]
057544-008	25 (635)	28.82 (732)	5000	600	5000	2500	5MT3/1CL/HT[1]
057541-005	25 (635)	28.81 (732)	2500	480	5000	2500	2500T3/Cl[1]
057549-001	25 (635)	28.81 (732)	2500	480	5000	2500	2500T3/VB/CL
057541-006	38 (965)	41.81 (1062)	3800	570	5000	2450	3800T3/CL[1]
057549-006	38 (965)	41.81 (1062)	3800	420	5000	2450	QIH420-3800/VS
057549-002	38 (965)	41.81 (1062)	3800	570	5000	2450	3800T3/VB/CL
Pigtail Lead Electrical Connection, EZ Eye Glare Reduction							
094312-001	16.2 (411)	19.8 (503)	3000	240	5000	2500	3000T3/CL
Metal Screw Base Electrical Connection							
057550-005	N/A	3.50 (89)	500	130	2000	2950	500Q/CL
057550-006	N/A	3.75 (95)	750	120	500	3050	750Q/CL
ETJ 2 Pin Base Lamp with Reflector (used in 4150 Heater)							
096881-001	N/A	N/A	250	120	175	3250	ETJ

[1] Horizontal only

Ordering Information-Lamps continued (2 lamp order minimum)

Model	Lighted Length	Overall Length	Rated Watts	Rated Volts	Average Life (Hours)	Color Temp. (K)	Lamp Description
Ceramic End-Seal							
106587-001[1]	2.65 (65)	4.80 (122)	1000	120	400	3200	QIH120-1000
106587-002[1]	2.95 (75)	6.69 (170)	2000	120	725	3200	QIH120-2000
103390-001	5 (127)	8.70 (224)	500	120	5000	2500	QIH120-500
103390-002	5 (129)	8.70(224)	1000	240	1000	2800	QIH240-1000
103390-003	10.7 (272)	14.1 (357)	1000	240	5000	2500	QIH240-1000
103390-004	11 (280)	14.1 (357)	2000	240	5000	2500	QIH240-2000
103390-005	16 (406)	19.7 (500)	1600	240	5000	2500	QIH240-1600
103390-006	16 (406)	19.7 (500)	3200	384	5000	2500	QIH384-3200
103390-012	16 (406)	19.8 (503)	3000	240	5000	2500	QIH240-3000R
103390-007	25 (638)	29 (737)	2500	480	5000	2500	QIH480-2500R
103390-008	25 (638)	29 (737)	5000	600	5000	2500	QIH600-500R
103390-009	38 (965)	42 (1067)	3800	570	5000	2500	QIH570-3800R
103390-010	38 (965)	42 (1067)	3800	480	5000	2500	QIH480-3800R
Ceramic End Seal EZ Eye Glare Reduction							
097771-001	10	14.0	1000	240	5000	2500	1000T3/Helen
103390-013	25	29.0	2500	480	5000	2500	QIH480-2500R13
Button Contact Electrical Connection							
057550-002	2.25 (57)	4.68 (120)	500	120	2000	3050	Q500T3/CL
057550-008	2.38 (60)	4.68 (119)	500	120	1500	3000	Q500T3/CL/6
057550-003	2.56 (65)	4.70 (120)	1000	120	400	3200	Q1000T3/4CL
057550-004	6.75 (171)	10.06 (256)	1500	240	2000	3000	Q1500T3/CL
083292-001	3.76 (61)	6.59 (167)	2000	120	125	3200	Q2000T4/CL
Medium Wave length, Ceramic End-Seal, Insulated Pigtail Lead Electrical Connection, Horizontal Mounting/Operation Only (Only for use in specific Research, Inc. heaters)							
106656-001[1]	11 (279)	14 (356)	1000	240	5000	1600	RAP-10-1000-240
106656-002[1]	11 (279)	14 (356)	1000	120	5000	1600	RAP-10-1000-120
106656-003[1]	16 (406)	19.81 (503)	1875	240	5000	1600	RAP-16-1875-240
106656-004[1]	26 (660)	28.81 (732)	2500	480	5000	1600	RAP-25-2500-480
106656-005[1]	38 (965)	42 (1067)	3800	480	5000	1600	RAP-38-3800-480

[1] Horizontal Only

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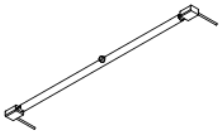
Lamp Drawings

LAMP DESCRIPTIVE REFERENCE			
A Lamp with Metalic End Seal	**B** Lamp with Button Contacts	**C** Lamp with Ceramic End Seals	**D** Lamp Screw in Contact
			

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Lamp Ordering Information

SpotIR Lamps

SPOT IR 4085							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
N/A	057550-005	Universal	Clear	500	120	2000	D
N/A	057550-006	Universal	Clear	750	120	500	D

SPOT IR 4150							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
N/A	096881-001	Universal	Clear	250	120	175	

LineIR Lamps

LINE IR 5194							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
2 inch	106587-001	Universal	Clear	1000	120	400	C
4 inch	106587-002	Universal	Clear	2000	120	125	C
5 inch	103390-002	Universal	Clear	1000	240	5000	C
10 inch	103390-004	Universal	Clear	2000	240	5000	C
16 inch	103390-012	Universal	Clear	3000	240	5000	C
25 inch	103390-008	Universal	Clear	5000	600	5000	C
38 inch	103390-010	Universal	Clear	3800	480	5000	C

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StripIR Lamps

STRIP IR 4185							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
5 inch	103390-001	Universal	Clear	500	120	5000	C
10 inch	103390-003	Universal	Clear	1000	240	5000	C
16 inch	103390-005	Universal	Clear	1600	240	5000	C
25 inch	103390-007	Universal	Clear	2500	480	5000	C
38 inch	103390-010	Universal	Clear	3800	480	5000	C

STRIP IR 5306							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
2 inch	106587-001	Horizontal	Clear	1000	120	400	C
5 inch	103390-002	Universal	Clear	1000	240	5000	C
10 inch	103390-004	Universal	Clear	2000	240	5000	C
16 inch	103390-012	Universal	Clear	3000	240	5000	C
25 inch	103390-008	Universal	Clear	5000	600	5000	C
38 inch	103390-010	Universal	Clear	3800	480	5000	C

STRIP IR 5560							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
5 inch	103390-001	Universal	Clear	500	120	5000	C
10 Inch	103390-003	Universal	Clear	1000	240	5000	C
16 Inch	103390-005	Universal	Clear	1600	240	5000	C
25 Inch	103390-007	Universal	Clear	2500	480	5000	C
38 Inch	103390-010	Universal	Clear	3800	480	5000	C

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PanelIR Lamps

PANEL IR 4555							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Lamp Wave Length
5 inch	103390-001	Universal	Clear	500	120	5000	Short
10 inch	103390-003	Universal	Clear	1000	240	5000	Short
10 Inch	106656-001	Horizontal	Clear	1000	240	5000	Medium
16 inch	103390-005	Universal	Clear	1600	240	5000	Short
16 inch	106656-003	Horizontal	Clear	1875	240	5000	Medium
25 Inch	103390-007	Universal	Clear	2500	480	5000	Short
25 Inch	106656-004	Horizontal	Clear	2500	480	5000	Medium
38 inch	103390-010	Universal	Clear	3800	480	5000	Short
38 inch	106656-005	Horizontal	Clear	3800	480	5000	Medium

PANEL IR 4765							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
25 inch	057541-005	Horizontal	Clear	2500	480	5000	A
25 inch	057549-001	Universal	Clear	2500	480	5000	A
25 inch	057544-008	Horizontal	Clear	5000	600	5000	A
38 inch	057541-006	Horizontal	Clear	3800	570	5000	A
38 inch	057549-002	Universal	Clear	3800	570	5000	A

PANEL IR 54775							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
25 inch	057541-005	Horizontal	Clear	2500	480	5000	A
25 inch	057549-001	Universal	Clear	2500	480	5000	A
25 inch	057544-008	Horizontal	Clear	5000	600	5000	A
38 inch	057541-006	Horizontal	Clear	3800	570	5000	A
38inch	057549-002	Universal	Clear	3800	570	5000	A

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PanelIR Lamps continued

PANEL IR 4554							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
5 inch	057541-001	Universal	Clear	500	120	5000	A
5 inch	057544-003	Universal	Clear	1200	144	5000	A
5 inch	057541-003	Universal	Clear	1200	144	5000	A
10 inch	057544-002	Universal	Clear	1000	240	5000	A
10 inch	057544-005	Universal	Clear	2000	240	3000	A
16 inch	057541-004	Horizontal	Clear	1600	240	5000	A
16 inch	057541-008	Horizontal	Clear	3000	240	5000	A
16 inch	094312-001	Universal	EZ Eye	3000	240	5000	A
25 inch	057541-005	Horizontal	Clear	2500	480	5000	A
25 inch	057549-001	Universal	Clear	2500	480	5000	A
25 inch	057544-008	Horizontal	Clear	5000	600	5000	A
38 inch	057541-006	Horizontal	Clear	3800	570	5000	A
38 inch	057549-002	Universal	Clear	3800	570	5000	A

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DryIR Lamps

DRY IR 6020								
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference	Wave Length
10 Inch	106656-001	Horizontal	Clear	1000	240	5000	C	Medium
10 Inch	106656-002	Horizontal	Clear	1000	120	5000	C	Medium

DRY IR 6030								
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference	Wave Length
10 inch	106390-003	Universal	Clear	1000	240	5000	C	Short
10 inch	106656-001	Horizontal	Clear	1000	240	5000	C	Medium

DRY IR 6040								
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference	Wave Length
16 inch	103390-005	Universal	Clear	1600	240	5000	C	Short
16 inch	106656-003	Horizontal	Clear	1875	240	5000	C	Medium

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Hi-TempIR Lamps

HI-TEMP IR 5075							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
2 inch	057550-003	Universal	Clear	1000	120	400	B

HI-TEMP IR 5090							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
6 inch	057544-003	Horizontal	Clear	1200	144	5000	A
10 inch	057541-002	Universal	Clear	1000	240	5000	A
10 inch	057544-005	Universal	Clear	2000	240	3000	A
10 inch	057541-010	Universal	Clear	6000	480	1500	A
16 inch	057541-004	Horizontal	Clear	1600	240	5000	A
16 inch	057541-008	Universal	Clear	3200	384	3000	A

HI-TEMP IR 5209							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
5 inch	103390-002	Universal	Clear	1000	240	5000	C
10 Inch	103390-004	Universal	Clear	2000	240	5000	C
16 Inch	103390-012	Universal	Clear	3000	240	5000	C

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ChamberIR Lamps

CHAMBER IR E4							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
2 inch	057550-002	Universal	Clear	500	120	5000	B
2 inch	057550-003	Universal	Clear	1000	120	5000	B
5 inch	057541-001	Universal	Clear	500	120	5000	A
6 inch	057550-004	Universal	Clear	1500	240	5000	B
10 inch	057544-002	Universal	Clear	1000	240	5000	A
10 inch	057544-005	Universal	Clear	2000	240	5000	A
16 inch	057541-004	Horizontal	Clear	1600	240	5000	A
16 inch	057541-008	Horizontal	Clear	3000	240	5000	A
16 inch	094312-001	Universal	EZ Eye	3000	240	5000	A
25 inch	057549-001	Universal	Clear	2500	480	5000	A
25 inch	057544-008	Horizontal	Clear	5000	600	5000	A
38 inch	057549-006	Universal	Clear	3800	420	5000	A
38 inch	057549-002	Universal	Clear	3800	570	5000	A

CHAMBER IR 4069								
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Ref.	Wave Length
10 inch	103390-003	Universal	Clear	1000	240	5000	C	Short
10 inch	103390-004	Universal	Clear	2000	240	5000	C	Short
16 inch	103390-005	Universal	Clear	1600	240	5000	C	Short
16 inch	103390-012	Universal	Clear	3000	240	5000	C	Short
25 inch	103390-007	Universal	Clear	2500	480	5000	C	Short
38 inch	103390-010	Universal	Clear	3800	480	5000	C	Short

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Speed-Dri Lamps

SPEED-DRI 3620								
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference	Wave Length
10 Inch	103390-004	Universal	Clear	2000	240	5000	C	Short
10 Inch	106656-001	Horizontal	Clear	1000	240	5000	C	Medium

SPEED-DRI 4561							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
16 Inch	094312-001	Universal	EZ Eye	3000	240	5000	A
25 Inch	057549-001	Universal	Clear	2500	480	5000	A

SPEED-DRI 5060								
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference	Wave-Length
10 Inch	106656-001	Horizontal	Clear	1000	240	5000	C	Medium

SPEED-DRI 5061								
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference	Wave-Length
16 Inch	106656-003	Horizontal	Clear	1875	240	5000	C	Medium

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Web-Dri Lamps

WEB-DRI 4570							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
16 inch	057541-004	Horizontal	Clear	1600	240	5000	A
16 inch	094312-001	Universal	EZ Eye	3000	240	5000	A
25 inch	057549-001	Universal	Clear	2500	240	5000	A

WEB-DRI 4580							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
25 inch	057549-001	Universal	Clear	2500	480	5000	A

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Obsolete Heating Models

Obsolete LineIR Model

(OBSOLETE) LINE IR 5193							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
2 inch	057550-002	Universal	Clear	500	120	2000	B
2 inch	057550-008	Universal	Clear	500	120	1500	B
2 inch	057550-003	Universal	Clear	1000	120	400	B
4 inch	083292-001	Universal	Clear	2000	120	125	B
5 inch	057541-001	Universal	Clear	500	120	5000	A
5 inch	057544-003	Horizontal	Clear	1200	144	5000	A
6 inch	057550-004	Horizontal	Clear	1500	240	2000	B
10 inch	057544-005	Horizontal	Clear	2000	240	3000	A
10 inch	057544-002	Horizontal	Clear	1000	240	5000	A
16 inch	057541-004	Horizontal	Clear	1600	240	5000	A
16 inch	057541-008	Horizontal	Clear	3000	240	5000	A
16 inch	094312-001	Universal	EZ Eye	3000	240	5000	A
25 inch	057549-001	Universal	Clear	2500	480	5000	A
25 inch	057544-008	Horizontal	Clear	5000	600	5000	A
38 inch	057549-002	Universal	Clear	3800	570	5000	A

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Obsolete StripIR Model

(OBSOLETE) STRIP IR 4184							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
5 inch	057541-001	Universal	Clear	500	120	5000	A
10 inch	057544-002	Horizontal	Clear	1000	240	5000	A
16 inch	057541-004	Horizontal	Clear	1600	240	5000	A
25 inch	057549-001	Universal	Clear	2500	480	5000	A
38 inch	057549-002	Universal	Clear	3800	570	5000	A

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Obsolete StripIR Model continued

(OBSOLETE) STRIP IR 5305							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
2 inch	057550-002	Universal	Clear	500	120	2000	B
2 inch	057550-008	Horizontal	Clear	500	120	1500	B
2 inch	057550-003	Horizontal	Clear	1000	120	400	B
5 inch	057541-001	Universal	Clear	500	120	5000	A
5 inch	057544-003	Universal	Clear	1200	144	5000	A
6 inch	057550-004	Horizontal	Clear	1500	240	2000	B
10 inch	057544-002	Universal	Clear	1000	240	5000	A
10 inch	057544-005	Universal	Clear	2000	240	3000	A
16 inch	057541-004	Horizontal	Clear	1600	240	5000	A
16 inch	057541-008	Horizontal	Clear	3000	240	5000	A
16 inch	094312-001	Universal	EZ Eye	3000	240	5000	A
25 inch	057549-001	Universal	Clear	2500	480	5000	A
25 inch	057544-008	Horizontal	Clear	5000	600	5000	A
38 inch	057549-002	Universal	Clear	3800	570	5000	A

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Obsolete Hi-TempIR / Speed-Dri Models

(OBSOLETE) HI-TEMP IR 5208							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
5 inch	057541-001	Universal	Clear	500	120	5000	A
5 inch	057544-003	Universal	Clear	1200	144	5000	A
10 inch	057541-002	Universal	Clear	1000	240	5000	A
10 inch	057544-006	Horizontal	Clear	2000	240	5000	A
10 inch	057541-010	Horizontal	Clear	6000	480	1500	A
16 inch	057541-009	Horizontal	Clear	3200	384	2500	A

(OBSOLETE) SPEED DRI 4560							
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference
16 Inch	094312-001	Universal	EZ Eye	3000	240	5000	A
25 Inch	057549-001	Universal	Clear	2500	480	5000	A

(OBSOLETE) SPEED-DRI 4540								
Heater Length	Lamp Model	Orientation	Quartz Envelope	Rated Watt	Rated Voltage	Average Life (Hr)	Description Reference	Wave-Length
10 Inch	057544-002	Universal	Clear	1000	240	5000	A	Short

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Application Chart

	Application	DryIR™	ChamberI®	ExtrudeI™	LineIR®	PanelIR®	ProfileIR™	SpotI®	StripIR®	Hi-TempIR®
Coatings	Cure and Melt Powders	X	X			X			X	
	Dry and Cure Paints	X	X			X			X	
	Dry Ink	X	X			X			X	
	Dry Adhesives	X	X			X			X	
	Preheating	X	X			X			X	
	Resin Curing	X				X			X	
Composites	Curing					X		X		X
	Filament Welding				X			X		X
	Laminating	X				X			X	
Electronics	Ceramic Processing				X			X		X
	Shrink Insulation	X				X			X	
	Soldering Desoldering				X			X		
	Thick Film Drying	X				X			X	
	Wafer Processing					X		X	X	X
Trial Testing	Aerodynamic Heating Simulation									X
	Coupon Tests		X							X
	Structural Tests		X							X
	Thermal Stress tests		X			X				X
Processing	Annealing				X	X		X		X
	Brazing				X					X
	Preheating	X	X		X	X			X	
	Soldering				X			X		
	Spring Stress Relief					X			X	X
	Weld Stress Relief				X			X	X	X
Plastic	Bending				X	X			X	
	Bonding	X			X	X				X
	Preheating	X	X		X	X				X
	Thermoforming	X	X		X	X				X
	Welding				X					
Glossing	Cosmetics					X				X
	Plastic Tubing		X							X
	Soap					X				X
Rubber	Curing		X	X		X	X			X
	Pre-Cure		X	X			X			X

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Products Available from Research, Inc.

Research, Inc. is the industry leader in the design, development and manufacture of electric infrared heating components and integrated heating systems. Our products are designed to meet a wide variety of process requirements including the drying, heating, curing, soldering, bonding and annealing of many different materials.

Whether it's one of our standard products or a custom heating system, we are committed to providing solutions to meet our customer's most demanding heating needs. The following types of heaters are available:

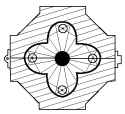
ControlIR® INFRARED HEATERS

All Model 5420 ControlIR®s have a power cable and plug to connect to a wall receptacle and a terminal block to terminate the wires coming from the heater. They all use a phase angle fired SCR to control voltage.

DryIR® INFRARED HEATERS

An aluminum reflector and either medium or short-wave lamps provide a band of heat from .5" - 4" wide. Can be used for water-based drying, solvent-based drying and adhesive curing.

ExtrudeIR® INFRARED HEATERS

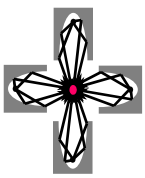


The Model 4069E ExtrudeIR curing System uses high intensity infrared lamps and polished aluminum reflectors to deliver heat precisely where it is needed for many curing and drying applications on extrusion lines.

LampIR® INFRARED HEATERS

Research Inc. specifies tungsten filament halogen lamps in most of its heaters. Halogen gas is added to the inert lamp gas to increase the life of the lamp. As the filament operates, tungsten slowly evaporates from the filament and is combined with the halogen to create a tungsten halide.

ChamberIR® INFRARED HEATERS

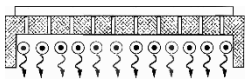


The Research, Inc. chamber heater can be ordered in many different sizes for your specific application.

LineIR® INFRARED HEATERS

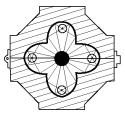
A lamp and formed reflector that concentrates heat precisely on a .25" wide line. Excellent for forming plastic, local heat treating and drying ink

PanelIR® INFRARED HEATERS



Designed with either ceramic or aluminum reflectors, the heater can provide consistent heat over a large area. Used for most drying and curing applications.

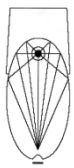
ProfileIR® INFRARED HEATERS



The Model 4069 ProfileIR® curing system uses high intensity infrared lamps and polished aluminum reflectors to deliver heat precisely where it is needed to cure irregularly shaped profiles.

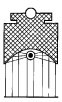
It can instantaneously give a surface cure that eliminates marks that occur when uncured rubber rubs on a conveyor.

SpotIR® INFRARED HEATERS



A single lamp and reflector heating system that focuses energy on a small (.25") target. Instant on/instant off capability makes it ideal for applications such as soldering, localized heat treating, and stress relieving.

StripIR® INFRARED HEATERS



A lamp and formed reflector that provides even heat distribution across a 1.7" wide strip. Can be used for curing, drying and precise heating.

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