

Model 4150



FAST. FOCUSED. CONTROLLED.

Infrared Heat. Instantaneous Results.

The SpotIR® Model 4150 is designed for use in any application that requires clean, non-contact heat on a small target or object. It is a single lamp and reflector heating system that focuses energy on a small (0.25") diameter target.

Applications

- Metal annealing
- Brazing
- Soldering and desoldering electronic components
- Solder termination
- Filament winding
- Activating thermo transfer
- Bonding
- Thermoforming
- Welding
- Heat Staking

FAST. FOCUSED. CONTROLLED.**Features and Benefits SpotIR Model 4150**

- The lamp reaches 90 percent of full operating temperature within three seconds of a cold start.
- The radiant energy dissipates to ten percent five seconds after the voltage from the power supply is turned off.
- Localized heat focuses only on the desired area without heating the rest of the product.
- The construction of this heater, combined with air-cooling, allows it to withstand a continuous high temperature operation.
- Non-contact heat source does not come in contact with product being heated.
- The infrared energy emitted from this heater can be adjusted to match the heating requirements of a variety of applications.
- Repeatable results can be achieved for consistent process outputs.
- The power controller required to control this heaters is included as a part of the package.

Product Description-SpotIR Model 4150

The product is comprised of two major components; The heater module and the power controller.

Heater Module

The model 4150 contains an emitter with an integral elliptical reflector. The reflector directs the infrared energy supplied by the emitter onto a small, spot, approximately 0.25 inch (6.4mm) in diameter and 1.1 inch (28mm) from the end of the heater collar, or at the end of the optical focusing cone. The Model 4150 utilizes a 250-watt, 120 volts, high temperature tungsten filament emitter.

Air Cooling

Due to the high heat output from the Model 4150, it is necessary to supply cooling air of at least 100 CFH to maintain proper operating conditions and prolong heater life. An air hose fitting is supplied with the heater which accepts 0.25 inch (6.4mm) outer diameter flexible tubing. An internal thermostat automatically removes power to the emitter in the event the heater temperature rises above 160F (71°C). 10 feet of tubing is included.

Mounting

The model 4150 heater can be mounted to any acceptable bracket, fixture, or other machinery that will support the heater's weight. A ¼-20 tapped hole is located on the back of the heater that will accept a similarly threaded screw. The maximum extension of the screw into the heater should be no more than 0.375 inch (9.5mm).

Product Description-SpotIR Model 4150

Power Controllers

The Model 4085 Heater comes wired to a power controller to precisely regulate the voltage being applied to the heater. The output of the heating element is very repeatable and is dependent on the voltage supplied to it. The power controllers are designed as part of this system to optimize the heater performance. The controllers can be ordered with one of several command signals options to allow you to choose how the heat output is controlled. The controller options for the SpotIR Model 4150 are:

Model 5420 Power Controller

The Model 5420 Power Controller has an off/on switch and a manual one-turn potentiometer that will vary the output voltage form 0% to 97% of the line voltage. The controller comes complete with a power cord and plug. Terminal block connections are used to connect the wiring from the heater.

Model 5420E Power Controller

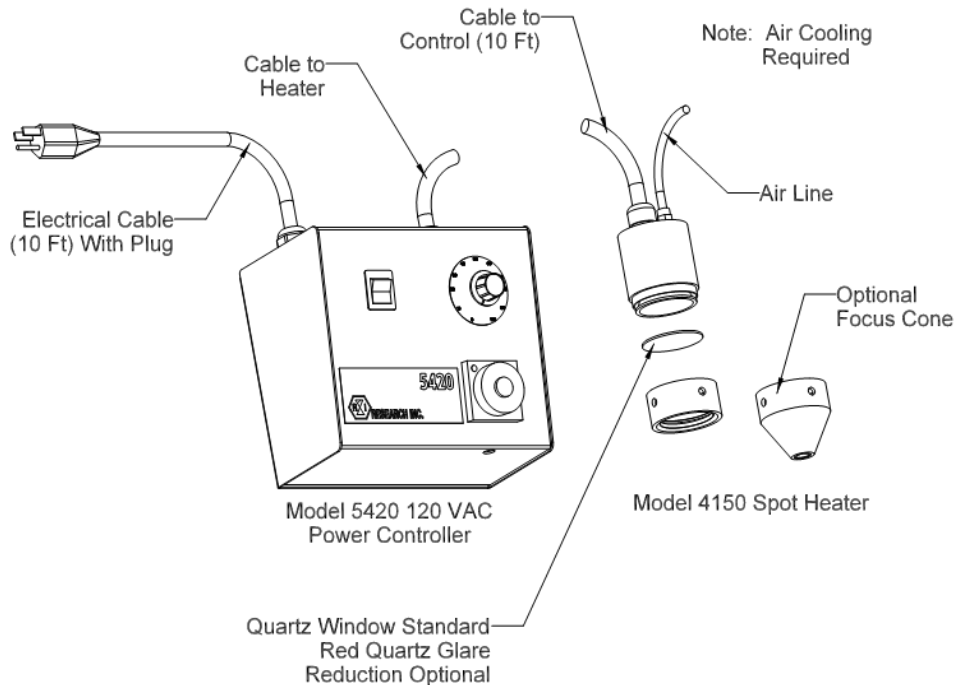
The Model 5420E Power Controller has an off/on switch, a manual one-turn potentiometer that will vary the output voltage form 0% to 97% of the line voltage and a timer. The timer has a 50 increment dial and may be set to adjust the voltage on time between: 0 to 5.0 seconds, 0 to 50 seconds, 0 to 5.0 minutes, 0 to 50minutes, 0 to 5.0 hours and 0 to 50 hours. The controller comes complete with a power cord and plug. Terminal block connections are used to install the wiring from the heater.

Model 5420mA Power Controller

The Model 5420mA Power Controller has an off/on switch and a receptacle/plug to accept a 4 to 20 mA control signal from an external source to regulate the output voltage from 0% to 97% of line voltage. The controller comes complete with a power cord and plug. Terminal block connections are used to install the wiring from the heater.

Product Drawing –SpotIR 4150 with Power Controller 5420

SpotIR Model 4150 Product Drawing



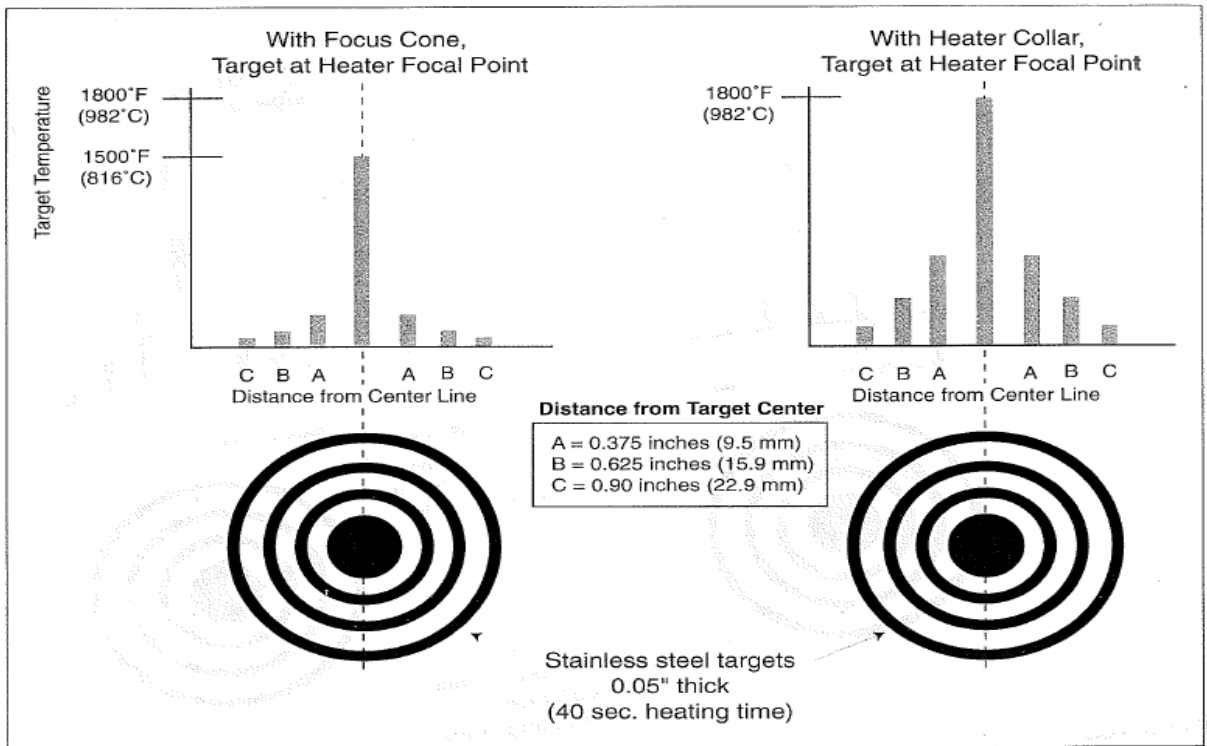
Technical Information

Product Temperatures

Product temperatures 1800 (982C) can be achieved with the Infrared Spot Heater. The illustrations below show the temperature profile of a stainless steel disk with and without a focus cone.

Heat Flux Densities

The heat flux generated at the focal point can be as high as 110 watts per square inch. (170 watts per square cm).



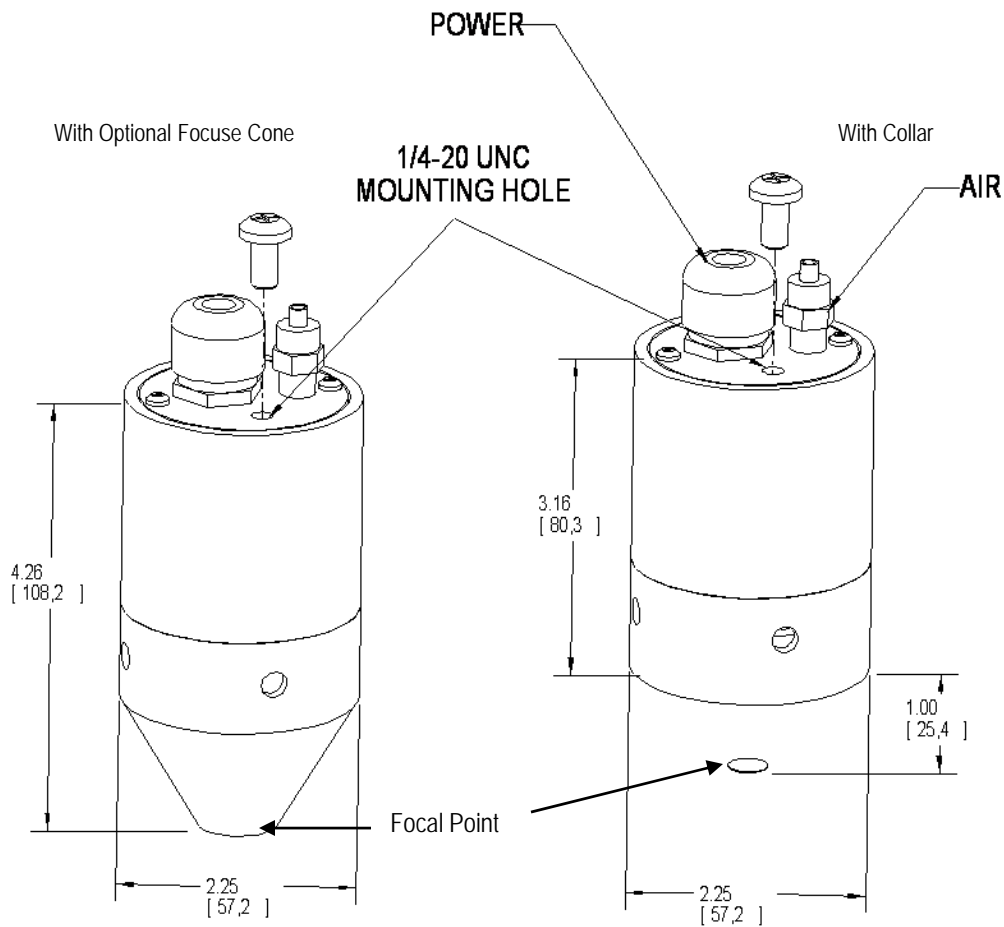
Additional Components and Accessories

Optional Red Quartz Glare Reduction Window

The standard Model 4150 heater is shipped with a retaining collar and clear quartz window from the factory. An optional Red Glare Reduction Shield can be ordered which greatly reduces the amount of glare produced by the heater when power is applied.

Optional Focus Cone or Collar

The standard Model 4150 heater shipped with a retaining collar and clear quartz window from the factory. An optional focusing cone which reduces stray-light from the surrounding area can be ordered.



Specifications – SpotIR Model 4150

SPECIFICATIONS		
Focal Point	Distance from heater: 1.1 Inch (27.9mm) from collar or at the end of the optional focus cone	
Maximum Heat Flux	At the spot: 110 W/in ² (170W/cm ²)	
Spot Size	0.25 Inch (6.4mm) diameter at focal point	
Maximum Power Dissipation	250 Watts	
Input Voltage	120 Volts	
Cooling Air Required	100 scfh (2.7 m ³ /hr) minimum .16 PSI	
Heater Mounting	One ¼-20 threaded hole tapped in the heater back	
Heater Weight	Heater 1.3 Lbs. (0.59 kg)	Heater and Controller 4.3 lbs (2.0 kg)
Emitter	175 hours at 120V	

How to Order - SpotIR Model 4150

PRODUCT DESCRIPTION	
4150-00-250-01-00	4150 SpotIR with Model 5420-120 controller (includes potentiometer)
4150-00-250-02-00	4150 SpotIR with Model 5420E-120 controller (includes potentiometer, and timer)
4150-00-250-03-00	4150 SpotIR with Model 5420mA-120 controller (includes 4-20mA input control)

Accessories and Replacement Parts - SpotIR Model 4150

ACCESSORIES and REPLACEMENT PARTS	
4150-250	Model 4150 Heater Module
097800-001	Clear Quartz Window
097080-001	Red Quartz Glare Reduction Window
096982-001	Heater Collar
096983-001	Focus Cone
097079-001	Snap Ring (retaining clip)
5420-120	Model 5420-120 Power Controller (includes potentiometer)
5420E-120	Model 5420 E-120 Power Controller (includes potentiometer, and timer)
5420mA-120	Model 5420 mA-120 Power Controller (includes 4-20mA input control)
096881-001	250 Watt 120 Volt Emitter (sold in pairs)
M4150	Additional Operation Manual also available at www.researchinc.com

Application Chart

	Application	DryIR™	Chamberl®	Extrudel™	LineIR®	PanelIR®	ProfileIR™	Spotl®	StripIR®	Hi-TemplR®
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	
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

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:



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.



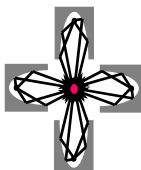
The Model 4069E ExtrudeIR curing System uses high intensity infrared lamps and polished aluminum reflectors to deliver heat precisely where it is needed for many curing and drying applications on extrusion lines.



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 heater operates, tungsten slowly evaporates from the filament and is combined with the halogen to create a tungsten halide.



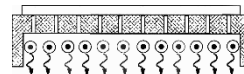
The Research, Inc. chamber heater can be ordered in many different sizes for your specific application.



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

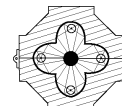


Designed with either ceramic or aluminum reflectors, the heater can provide consistent heat over a large area. Used for most drying and curing applications.

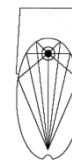


The Model 4069 ProfileIR® curing system uses high intensity infrared lamps and polished aluminum reflectors to deliver heat precisely where it is needed to cure irregularly shaped profiles.

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



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.



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.

