

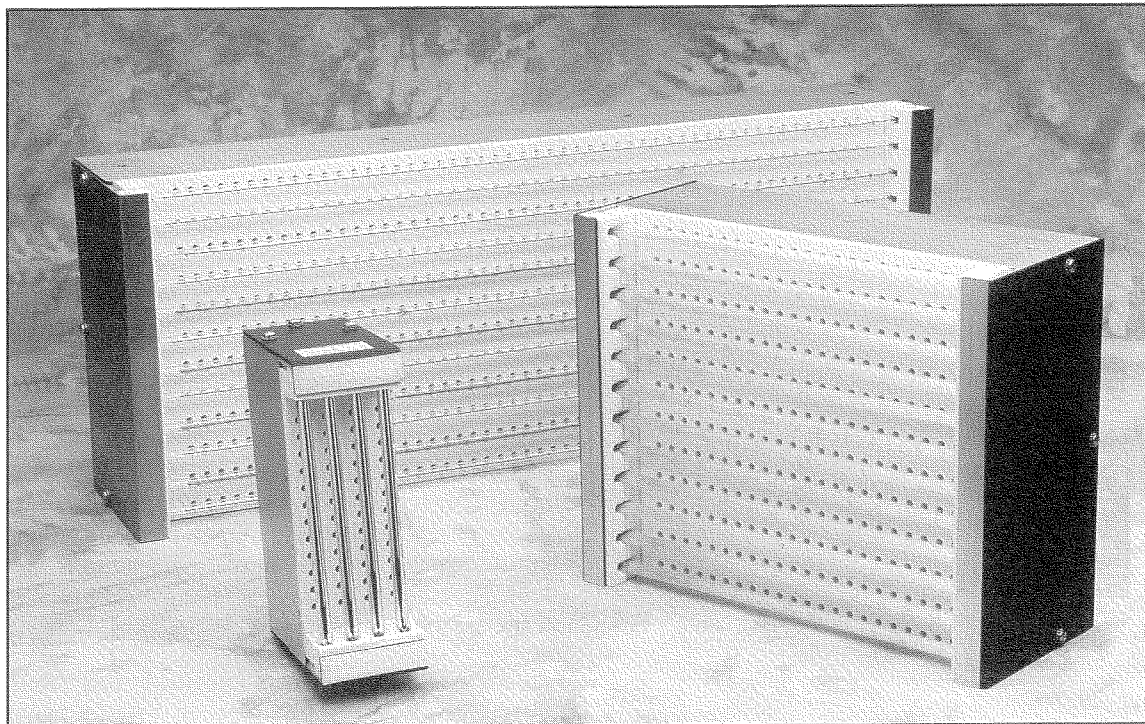
# PanelIR<sup>TM</sup>

Infrared Heaters

## PRODUCT DATA SHEET

Models 4554, 4765, & 54775

PanelIR-D-01-A



- **High intensity, short wave, quartz lamp heat source**
- **Fast response lamps**  
yield 90 percent output within three seconds
- **Non-contact heat source**  
does not come in contact with the product being heated
- **Localized heat**  
only on the desired area without heating the rest of the product
- **Controllable energy output**  
can be adjusted to match process requirements
- **Repeatable results**  
can be achieved for consistent process outputs
- **Electric heat source**  
is clean and efficient
- **Dissipated heat flux densities**  
to 269 watts per square inch (414 kilowatts per square meter)



## Application

Models 4554, 4765, and 54775 PanelIR™ Series may be used in any conveyor oven or custom heating system requiring clean, fast response and efficient infrared radiant heat. Typical applications include:

- Drying paint
- Curing graphite
- Drying adhesive
- Drying ink
- Drying coatings
- Forming plastic
- Curing plastic
- Fusing plastic
- Fusing ceramic coatings
- Stress relieving metal
- Stretch forming metal

## Features and Benefits

The PanelIR Series of electric infrared radiant heaters supply a variety of features and related benefits:

**Continuous Operation** - The design and construction of the heaters, combined with forced air cooling, allows all the models within the PanelIR Series to withstand continuous exposure to high temperatures.

**Rapid Response** - The PanelIR series heaters use tubular quartz, 'T3-style', halogen cycle lamps as radiant energy emitters. These lamps heat up and cool down instantly in response to changes in power control signals. They reach 90% of full operating temperature within three seconds of a cold start. The radiant energy dissipates to 10% within five seconds after power is removed.

**Modular Design** - Each of the models of the PanelIR series are modular in design allowing for multiple units to be installed side-by-side to create large areas of continuous heat output.

**Controllable Energy Output** - The infrared energy emitted from all of the PanelIR models can be adjusted to match the heating requirements of many different applications. Research, Inc. manufactures a complete line of SCR power control instrumentation that provides precise power control to these heaters.

In addition, the PanelIR heaters can be electrically wired so individual heating 'zones' can be generated to heat different target sizes.

**Self-Cleaning Heater Modules** - The ceramic reflectors used in the PanelIR Series heater modules are self-cleaning in most applications. This feature

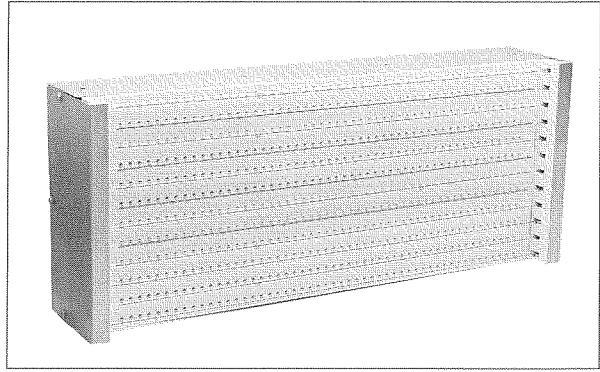


Figure 1: Model 4554 High Density Infrared Pyropanel

provides both high efficiency and low maintenance cost.

## Description—Model 4554

The Model 4554 High Density Infrared Pyropanel is a modular, panel-type heating unit that combines radiant and convection heating techniques. A forced air flow system turns waste heat into usable energy and allows the heater to operate efficiently at very high power levels. The basic Model 4554 includes the following major components:

**Heater Module** - The Model 4554 uses tubular quartz lamps backed by a ceramic reflector to provide heat. It is available in a variety of heated widths and heated lengths to accommodate different heating requirements.

**Overheat Protection** - A thermostat is mounted to the backside of the heater reflector that can be wired directly to the power source or to an external failure indicator (i.e. an alarm, failure light, etc.). The thermostat will either remove power from the unit or trip the external indicator if the heater exceeds the thermostat trip temperature.

**Forced Air Blowers** - Forced air is required to protect the lamp end seals from overheating when the Model 4554 is in operation. Blower systems are available with the heater module that can supply a high volume of forced air.

**Optional Edge Reflectors** - Edge reflectors are available to restrict the radiant energy to a rectangular area.

## Technical Information— Model 4554

**Product Temperatures** - The maximum workpiece temperature depends upon the voltage applied to the heater lamps, the ability of the

workpiece to absorb radiant energy, and the amount of heat loss. For most continuous heating processes, the maximum workpiece temperature should not exceed 800°F (427°C).

**Product Sizes** - Areas of up to 38 X 12 inches (965 x 305 mm) can be heated with a single heater. Larger heated areas can be created by mounting two or more Model 4554 heaters side-by-side.

**Heat Flux Densities** - There are two basic lamp types available for the Model 4554: 100 or 200 watts per inch (3.9 or 7.9 watts per millimeter) of lighted length. Dissipated power for the Model 4554 is either 100 or 200 watts per square inch (155 or 310 kilowatts per square meter). The three inch wide Model 4554 heater has a 0.75 inch (19 mm) lamp spacing and dissipates 133 or 269 watts per square inch (206 or 414 kilowatts per square meter).

**Heater Module** - The absorption/emission characteristics of the ceramic reflector surfaces in the heater module maintain a high surface temperature that continually vaporizes organic contaminants. The reflector material also serves as a re-emitter of medium wave (3 to 4 micron) infrared energy. This can be beneficial in many processes depending on the absorptive properties of the material being heated.

The heater module is available in heated lengths of 5, 10, 16, 25, and 38 inches (127, 254, 406, 635, and 965 mm) and heated widths of 3, 6, or 12 inches (76, 152, and 305 mm). Model 4554 heaters with 3 inch heated widths use 4 lamps installed on 0.75 inch (19 mm) centers. All other models use either 6 or 12 lamps installed on 1 inch (25 mm) centers. Heated length and width are specified within the model number.

An electrical bus bar terminal strip is located in each end of the Model 4554 for easy lamp wiring connection. This configuration allows for either individual lamp wiring or for specific 'zones' to be generated by wiring multiple lamps together.

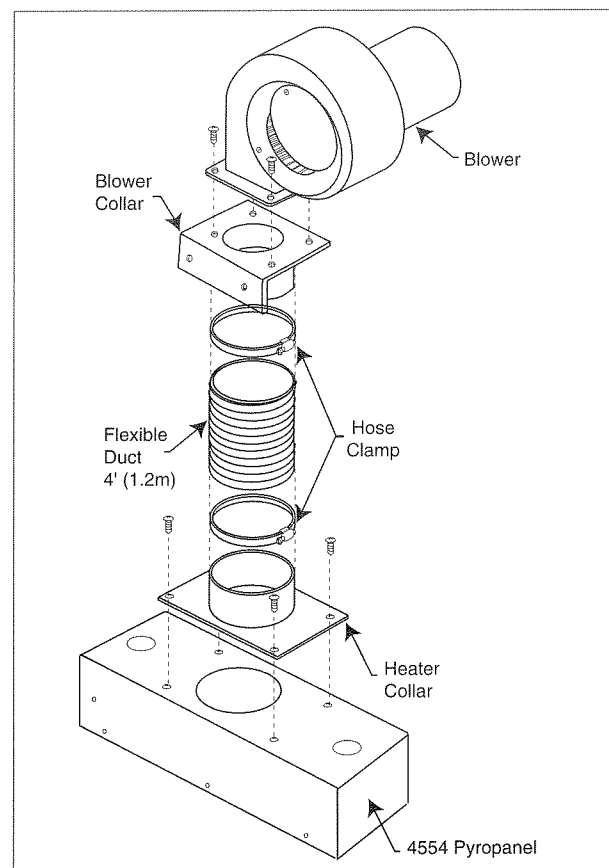
**Mounting** - The back of the Model 4554 has four 1/4-20 X 1/2 inch screws installed for mounting purposes.

**Forced Air Blowers** - Heater- and remote-mounted forced air blowers are available for the Model 4554. These assemblies include 120V and 230V versions (both operable at either 50 Hz or 60 Hz). Air from the blowers is directed through bleed holes in the heater reflector along the full length of each lamp. This air cools the reflector and lamps while providing a preheated convection air flow to improve the heating

rate and power efficiency in most applications. Air flow rates required to operate the various Model 4554 heaters are listed in Specifications. Blowers for most Model 4554 heaters are specified within the model number or can be ordered separately from the heater. The 3 inch (76 mm) wide heaters require remote mounted blowers that are ordered separately from the heater (Figure 2).

**Edge Reflectors** - The edge reflectors are constructed from the same materials used in the heater modules. Edge reflectors are specified in the model number or as accessories (in pairs), ordered separately from the Model 4554 heater.

**Lamps** - A variety of high intensity, short wave, tubular quartz, 'T3-style', halogen lamps are available for the different heated lengths of the Model 4554. The tungsten emitter in these lamps has an operating temperature of approximately 4000°F (2205°C) with a spectral energy peak wavelength of 1.15 microns. The numbers of lamps required to operate the various Model 4554 heaters are listed in Specifications. The lamps are ordered and sold separately from the Model 4554 heaters.



**Figure 2: Model 4554 With Optional Remote-Mount Blower Kit**

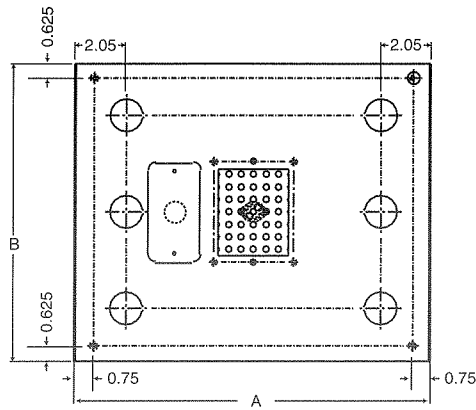
## Specification – Model 4554

Model Number	Number of Lamps	Lamp Type	Lamp Power (Watts)	Lamp Rated Voltage (Volts)	Applied Lamp Voltage (Volts)	Current Per Lamp at Applied Lamp Voltage (Amps)	Total Power Per Lamp (kW)
4554-B-05-03		500T3, 500T3/CL	500	120	120	4.2	0.5
		1200T3/CL, 1200T3/CL/HT	1200	144	120 144	6.3 8.3	0.9 1.2
4554-B-10-03		1000T3	1000	240	240	4.2	1.0
		2000T3/CL/HT	2000		240	8.3	2.0
4554-B-16-03	4	1600T3, 1600T3/CL	1600	240	240	6.7	1.6
		3000T3/CL	3000		240	12.5	3.0
4554-B-25-03		2500T3, 2500T3/CL, 2500T3/VB/CL	2500	480	480	5.2	2.5
		5MT3/1CL/HT	5000	600	480 600	7.5 8.3	3.6 5.0
4554-B-38-03		3800T3, 3800T3/CL, 3800T3/VB 3800T3/VB/CL	3800	570	480	6.1	2.9
		3800T3/CL/HT/420			420	420	9.1
4554-A-05-06	6	500T3, 500T3/CL, 500T3/CL/HT	500	120	120	4.2	0.5
4554-A-05-12	12	1200T3/CL, 1200T3/CL/HT	1200	144	120	7.5	0.9
					144	8.3	1.2
4554-A-10-06	6	1000T3	1000	240	240	4.2	1.0
4554-A-10-12	12	2000T3/CL/HT	2000	240	240	8.3	2.0
4554-A-16-06	6	1600T3, 1600T3/CL	1600	240	240	6.7	1.6
4554-A-16-12	12	3000T3/CL	3000	240	240	12.5	3.0
4554-A-25-06	6	2500T3, 2500T3/CL, 2500T3/VB/CL	2500	480	480	5.2	2.5
4554-A-25-12	12	5MT3/1CL/HT	5000	600	480	7.5	3.6
					600	8.3	5.0
4554-A-38-06	6	3800T3, 3800T3/CL, 3800T3/VB 3800T3/VB/CL	3800	570	480	6.1	2.9
					570	6.7	3.8
4554-A-38-12	12	3800T3/CL/HT/420		420	420	9.1	3.8

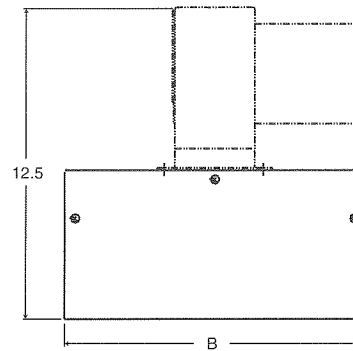
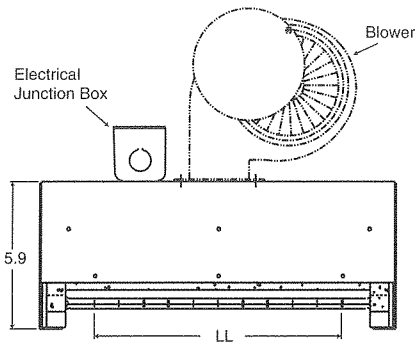
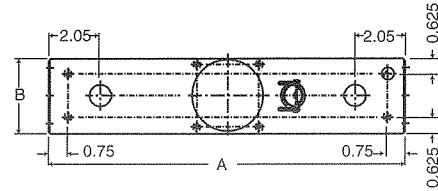
## Dimensions – Model 4554 (See Figure 3)

Model	Lighted Length (LL) Inches (mm)	Overall Length (A) Inches (mm)	Overall Width (B) Inches (mm)	Rated Voltage
4554-05	5-6 (127-152)	9.38 (238)	3, 6, or 12 (76, 152, or 305)	120-144
4554-10	10 (254)	14.38 (365)		240
4554-16	16 (406)	20.39 (518)		240
4554-25	25 (635)	29.38 (746)		480-600
4554-38	38 (965)	42.38 (1076)		420-570

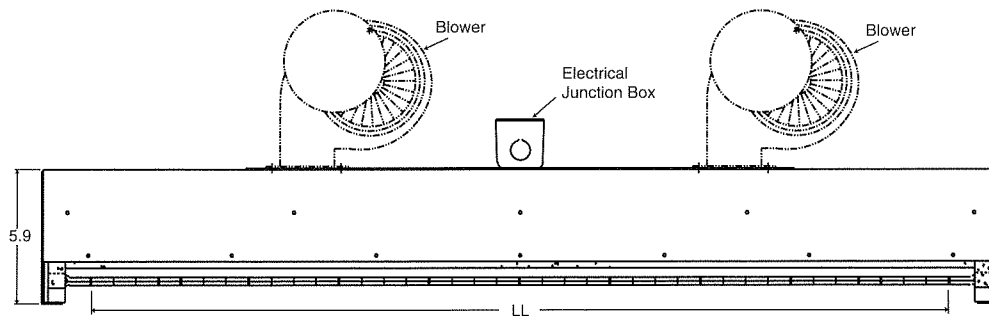
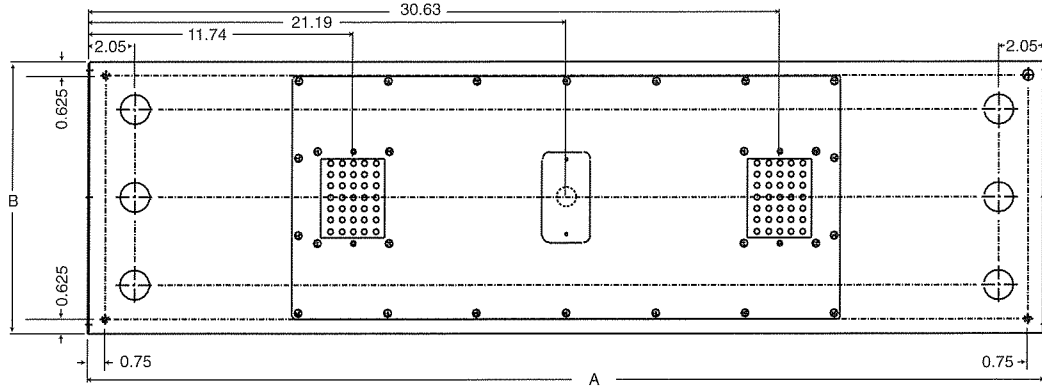
**6 & 12 Inch (152 & 305 mm) Wide Model 4554**



**3 Inch (76 mm) Wide Model 4554**



**38 Inch (965 mm) Length Model 4554**



**Figure 3: Model 4554 Dimensions (All Dimensions in Inches)**

## Ordering Information – Model 4554

Model	Product Description
4554	High Density Infrared Pyropanel
Code	Lamp Spacing
A	1 inch (25 mm) on center
B <sup>(1)</sup>	0.75 Inch (19 mm) on center (Available for Width Code 03 only)
Code	Length
05	5 Inches (127 mm)
10	10 Inches (254 mm)
16	16 Inches (406 mm)
25	25 Inches (635 mm)
38	38 Inches (965 mm)
Code	Width
03 <sup>(1)</sup>	3 Inches ( 76 mm)
06	6 Inches (152 mm)
12	12 Inches (304 mm)
Code	Blower Kit
HB115 <sup>(2)</sup>	Heater-mounted blower, 115V, 50/60 Hz
HB230 <sup>(2)</sup>	Heater-mounted blower, 230V, 50/60 Hz
NB	No Blower
Code	Additional Options
ER	Edge Reflectors
<p>(1) 3 inch (76 mm) width models use four lamps located on 0.75 inch (19 mm) centers.</p> <p>(2) Heater-mounted blower kits are only available on 6 inch (152 mm) and 12 inch (304 mm) width heaters. Order Remote-mounted Blower kit for 3 inch (76 mm) wide heaters from 'Accessories/Spare Parts' list."</p>	

## Ordering Example – Model 4554

	Model	Lamp Spacing	Length	Width	Blower Kit	Additional Options
Typical Model Number	4554	A	25	06	HB115	ER

## Accessories, Spare & Replacement Parts – Model 4554

Model	Description
	<b>Set of two edge reflectors for:</b>
ER-4553/4-05	5 Inch (127 mm) length
ER-4553/4-10	10 Inch (254 mm) length
ER-4553/4-16	16 Inch (406 mm) length
ER-4553/4-25	25 Inch (635 mm) length
ER-4553/4-38	38 Inch (965 mm) length
	<b>Heater-mounted Blower Kit for:</b>
HB115-5-25	5 Inch (127 mm) to 25 inch (635 mm) lengths, 115V, 50/60 Hz
HB115-38	38 Inch (965 mm) length, 115V, 50/60 Hz
HB230-5-25	5 Inch (127 mm) to 25 inch (635 mm) lengths, 230V, 50/60 Hz
HB230-38	38 Inch (965 mm) length, 230V, 50/60 Hz
	<b>Remote-mounted Blower Kit for:</b>
R3B115	3 Inch (76 mm) Width, 5 inch (127 mm) to 38 inch (965 mm) lengths, 115V, 50/60 Hz
R3B230	3 Inch (76 mm) Width, 5 inch (127 mm) to 38 inch (965 mm) lengths, 230V, 50/60 Hz
RB115-5-25	6 Inch (152 mm) or 12 inch (304 mm) Widths, 5 Inch (127 mm) to 25 inch (635 mm) lengths, 115V, 50/60 Hz
RB115-38	6 Inch (152 mm) or 12 inch (304 mm) Widths, 38 Inch (965 mm) length, 115V, 50/60 Hz
RB230-5-25	6 Inch (152 mm) or 12 inch (304 mm) Widths, 5 Inch (127 mm) to 25 inch (635 mm) lengths, 230V, 50/60 Hz
RB230-38	6 Inch (152 mm) or 12 inch (304 mm) Widths, 38 Inch (965 mm) length, 230V, 50/60 Hz
M4554	Additional Model 4554 Operation Manual

## Lamps – Model 4554

Model	Heater Length	Watts	Lamp Description
057540-002	5 Inches (127 mm)	500	500T3
057541-001	5 Inches (127 mm)	500	500T3/CL
094312-002	5 Inches (127 mm)	500	500T3/CL <sup>(2)</sup>
057541-003	5 Inches (127 mm)	1200	1200T3/CL
057544-003	5 Inches (127 mm)	1200	1200T3/CL/HT
057540-003	10 Inches (254 mm)	1000	1000T3 <sup>(1)</sup>
057544-002	10 Inches (254 mm)	1000	1000/T3/2CL/HT <sup>(1)</sup>
057544-005	10 Inches (254 mm)	2000	2000/T3/CL/HT <sup>(1)</sup>
057540-004	16 Inches (406 mm)	1600	1600T3 <sup>(1)</sup>
057541-004	16 Inches (406 mm)	1600	1600T3/CL <sup>(1)</sup>
057541-008	16 Inches (406 mm)	3000	3000T3/CL <sup>(1)</sup>
094312-001	16 Inches (406 mm)	3000	3000T3/CL <sup>(2)</sup>
057541-005	25 Inches (635 mm)	2500	2500T3/CL <sup>(1)</sup>
057549-001	25 Inches (635 mm)	2500	2500T3/VB/CL
057544-008	25 Inches (635 mm)	5000	5MT3/1CL/HT <sup>(1)</sup>
057540-006	38 Inches (965 mm)	3800	3800T3 <sup>(1)</sup>
057541-006	38 Inches (965 mm)	3800	3800T3/CL <sup>(1)</sup>
057549-002	38 Inches (965 mm)	3800	3800T3/VB/CL
057540-007	38 Inches (965 mm)	3800	3800T3/420 <sup>(1)</sup>

(1) These lamps are for horizontal operation only.

(2) HeLeN-coated, glare reduction lamp.

## Description—Models 4765 & 54775

The PanelIR Series of electric infrared area heaters includes two different models designed for large area heating applications. Both units, the Model 4765 and the Model 54775, are modular in design and combine both radiant and convection heating techniques for use in many different applications. Both heaters use a forced air flow system which turns waste heat into usable energy and allows the heaters to operate efficiently at high power levels. In addition, these units include the following major components:

**Heater Module** - The Model 4765 & 54775 heaters use tubular quartz, 'T3-style', halogen lamps as their infrared energy source. Ceramic reflectors back these emitters and re-emit radiant energy back toward the target product. Both models are available in multiple lengths and widths to accommodate different heating requirements.

**Edge Reflectors** - Both models incorporate edge reflectors that restrict the radiant energy to a rectangular area.

**Forced Air Blower System** - Both models are designed with forced air blower systems that provide both cooling air to the infrared lamps and convective heating assistance during operation.

**Overheat Protection** - An airflow interlock switch is incorporated into both models that causes the removal of electrical power to the heater if a low air flow condition is detected.

**Model 4765 & 54775 Differences** - Although both heaters are designed for large area heat applications, they are unique in their own right and have important differences. The Model 4765 Pyropanel Array is designed using multiple Model 4554 Pyropanel heaters connected together as a single unit. Adjustable leg supports allow the heater to be easily installed with heater-to-target product height easily changed. Access to the heater lamps is through the ends of the unit requiring minimum clearance areas in all installations.

The Model 54776 Pyrospan heater is a modular design allowing for multiple units to be installed side-by-side to create large areas of continuous heat output. Access to the heater lamps is through the back of the unit allowing for installation in 'close tolerance' or restricted access areas.

## Technical Information – Models 4765 & 54775

**Product Temperatures** - The maximum target workpiece temperature depends upon the voltage

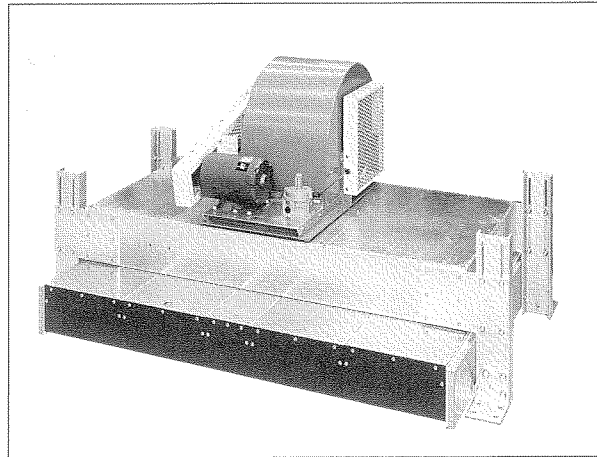


Figure 4: Model 4765 Pyropanel

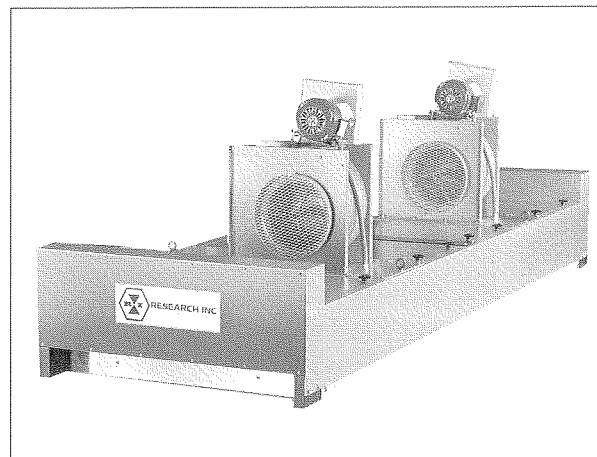


Figure 5: Model 54775 Pyropanel

applied to the heater lamps, the ability of the workpiece to absorb radiant energy, and the amount of heat loss. For most continuous heating processes, the maximum workpiece temperature should not exceed 800°F (427°C).

**Model 4765 Product Sizes** - Target products up to 38 X 66 inches (965 X 1676 mm) can be heated with a single Model 4765 heater. Mounting two or more units side-by-side can create larger heated areas.

**Model 54775 Product Sizes** - Target product sizes up to 38 X 144 inches (965 X 3657 mm) can be heated with a single Model 54775. Installing multiple heaters side-by-side can create larger heated areas.

**Heat Flux Densities** - At 25 inch (635 mm) heated lengths, using 5000 watt rated lamps, and operating at rated voltages, both models dissipate radiant heat flux densities of 200 watts per square inch (310 kilowatts per square meter). At 38 inch (965 mm) heated lengths and operating at rated voltages,



both models are capable of dissipating radiant heat flux densities of 100 watts per square inch (155 kilowatts per square meter).

**Heater Module** - The absorption/emission characteristics of the ceramic reflector surfaces in the heater modules of both models maintain a high surface temperature that continually vaporizes organic contaminants. The reflector material also serves as a re-emitter of medium wave (3 to 4 micron) infrared energy. This can be beneficial in many processes depending on the absorptive properties of the material being heated.

The heater modules in both models are available in heated lengths of either 25 or 38 inches (635 or 965 mm). The Model 4765 can be ordered in heated widths from 30 to 66 inches (762 to 1676 mm) in 6 inch (152 mm) increments. The Model 54775 can be ordered in heated widths from 42 to 144 inches (1067 to 3658 mm) in 6 inch (152 mm) increments.

Electrical bus bar terminal strips are located in each end of both models that allow for easy lamp wiring. Additionally, this feature allows for either individual lamp wiring or for specific 'zones' to be generated by wiring multiple lamps together.

Heated length, width, and the number of separate heat zones (if required) are specified within the model number of each model at the time of order.

**Edge Reflectors** - The edge reflectors of both models are constructed from the same materials used in the heater modules.

**Forced Air Blower Systems** - Both models are designed with externally-mounted forced air blower/

plenum systems that supply cooling air to the infrared lamps. This cooling air is directed through bleed holes in the ceramic reflectors along the full length of each lamp. Initially, this air cools the reflector and lamps as it enters the heater. As it is heated, the air then becomes convective which improves the heating rate and power efficiency of the entire heating system. Airflow rates required to operate both models are listed in Specifications.

The Model 54775 can be ordered with air inlet collars in place of the forced air blower system.

**Mounting the Model 4765** - The base of each adjustable leg of the Model 4765 has four, 0.437 inch (11 mm) diameter holes for mounting purposes. The Model 4765 heater should be mounted with provision for access to the end covers of each component heater for simplified lamp wiring and replacement.

**Mounting the Model 54775** - Each Model 54775 heater has eight, 0.406 inch (10.3 mm) diameter holes located on the heater top for mounting purposes.

**Lamps** - A variety of high intensity, short wave, tubular quartz, 'T3-style', halogen lamps are available for either heated length of both the Model 4765 and the Model 54775. The tungsten emitter in these lamps has an operating temperature of approximately 4000°F (2205°C) with a spectral energy peak wavelength of 1.15 microns. The numbers of lamps required to operate the different sizes of either heater model are listed in Specifications. The lamps are ordered and sold separately from either heater model type.

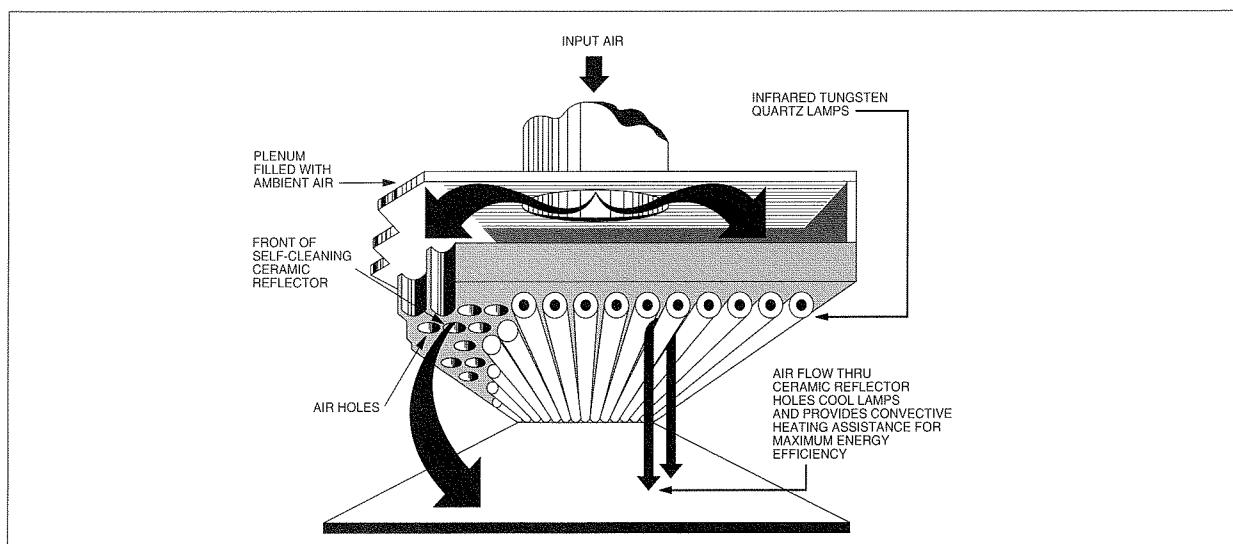


Figure 6: Models 4765 and 54775 Cross Section

## Specification – Model 4765

Model Number	Number of Lamps	Air Flow SCFM (m³/min)	Lamp Length	Lamp Type	Lamp Rated Voltage	Lamp Power at Rated Voltage (Watts)
4765-25-30	30	391 (11.1)	25 inch (635 mm) lighted length lamps	2500T3 2500T3/CL 2500T3/VB/CL	480	2500
4765-25-36	36	469 (13.1)				
4765-25-42	42	547 (15.5)				
4765-25-48	48	625 (17.7)		5MT3/1CL/HT	600	5000
4765-25-54	54	703 (19.9)				
4765-25-60	60	781 (22.1)				
4765-25-66	66	859 (24.3)				
4765-38-30	30	594 (16.8)	38 inch (965 mm) lighted length lamps	3800T3 3800T3/CL 3800T3/VB/CL	570	3800
4765-38-36	36	713 (20.2)				
4765-38-42	42	831 (23.5)				
4765-38-48	48	950 (26.9)		3800T3/420	420	
4765-38-54	54	1069 (30.3)				
4765-38-60	60	1189 (33.6)				
4765-38-66	66	1306 (37.0)				

## Ordering Information – Model 4765

Model	Product Description
4765	Pyropanel Array Infrared Heater
Code	Length
25	25 Inches (635 mm)
38	38 Inches (965 mm)
Code	Width
30	30 Inches (762 mm)
36	36 Inches (914 mm)
42	42 Inches (1067 mm)
48	48 Inches (1219 mm)
54	54 Inches (1372 mm)
60	60 Inches (1524 mm)
66	66 Inches (1676 mm)
Code	Additional Options
Z(#)	Heat Zones (#) = number of heat zones required, customer-specified

## Ordering Example – Model 4765

	Model	Length	Width	Additional Options
Typical Model Number	4765	38	54	Z (4)

## Lamps – Model 4765

Model	Heater Length	Watts	Lamp Description
057541-005	25 Inches (635 mm)	2500	2500T3/CL <sup>(1)</sup>
057549-001	25 Inches (635 mm)	2500	2500T3/VB/CL
057544-008	25 Inches (635 mm)	5000	5MT3/1CL/HT <sup>(1)</sup>
057540-006	38 Inches (965 mm)	3800	3800T3 <sup>(1)</sup>
057541-006	38 Inches (965 mm)	3800	3800T3/CL <sup>(1)</sup>
057549-002	38 Inches (965 mm)	3800	3800T3/VB/CL
057540-007	38 Inches (965 mm)	3800	3800T3/420 <sup>(1)</sup>

<sup>(1)</sup> These lamps are for horizontal operation only.

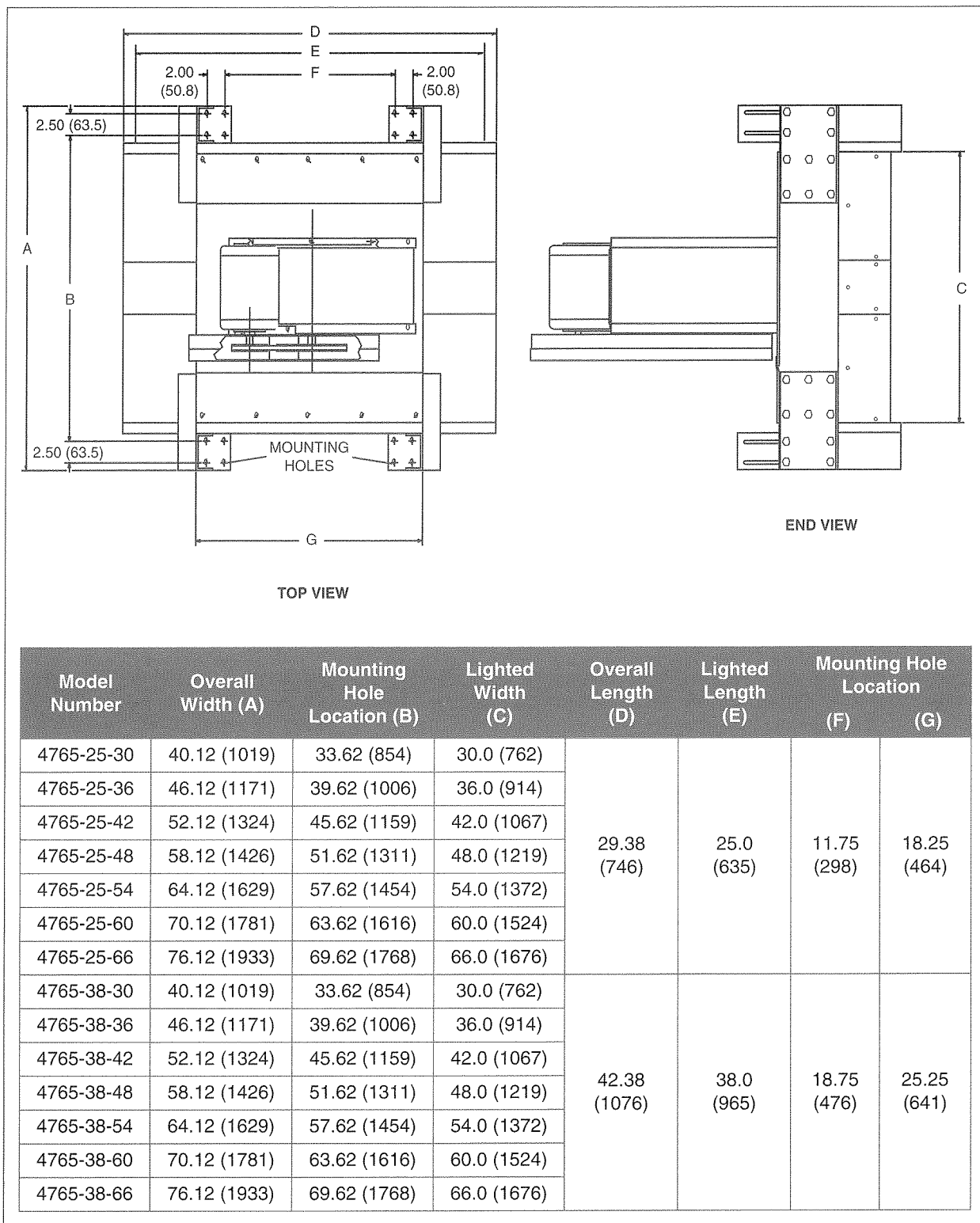


Figure 7: Model 4765 Dimensions [All dimensions in inches (mm)]

## Ordering Information – Model 54775

Model	Product Description
54775	Pyrospan Infrared Heater
Code	Length
25	25 Inches (635 mm)
38	38 Inches (965 mm)
Code	Width
42	42 Inches (1067 mm)
48	48 Inches (1219 mm)
54	54 Inches (1372 mm)
60	60 Inches (1524 mm)
66	66 Inches (1676 mm)
72	72 Inches (1829 mm)
78	78 Inches (1981 mm)
84	84 Inches (2134 mm)
90	90 Inches (2286 mm)
96	96 Inches (2438 mm)
102	102 Inches (2591 mm)
108	108 Inches (2743 mm)
114	114 Inches (2896 mm)
120	120 Inches (3048 mm)
126	126 Inches (3200 mm)
132	132 Inches (3353 mm)
138	138 Inches (3505 mm)
144	144 Inches (3658 mm)
Code	Forced Air Configuration
A	Forced Air Blowers
B	Air Inlet Collars
Code	Additional Options
Z(#)	Heat Zones (# = number of heat zones required, customer-specified)
G	Lamp Protection Bars

## Ordering Example – Model 54775

	Model	Length	Width	Forced Air Configuration	Additional Options
Typical Model Number	<b>54775</b>	<b>38</b>	<b>126</b>	<b>A</b>	<b>G</b>

## Lamps – Model 54775

Model	Heater Length	Watts	Lamp Description
057541-005	25 Inches (635 mm)	2500	2500T3/CL <sup>(1)</sup>
057549-001	25 Inches (635 mm)	2500	2500T3/VB/CL
057544-008	25 Inches (635 mm)	5000	5MT3/1CL/HT <sup>(1)</sup>
057540-006	38 Inches (965 mm)	3800	3800T3 <sup>(1)</sup>
057541-006	38 Inches (965 mm)	3800	3800T3/CL <sup>(1)</sup>
057549-002	38 Inches (965 mm)	3800	3800T3/VB/CL
057540-007	38 Inches (965 mm)	3800	3800T3/420 <sup>(1)</sup>

<sup>(1)</sup> These lamps are for horizontal operation only.

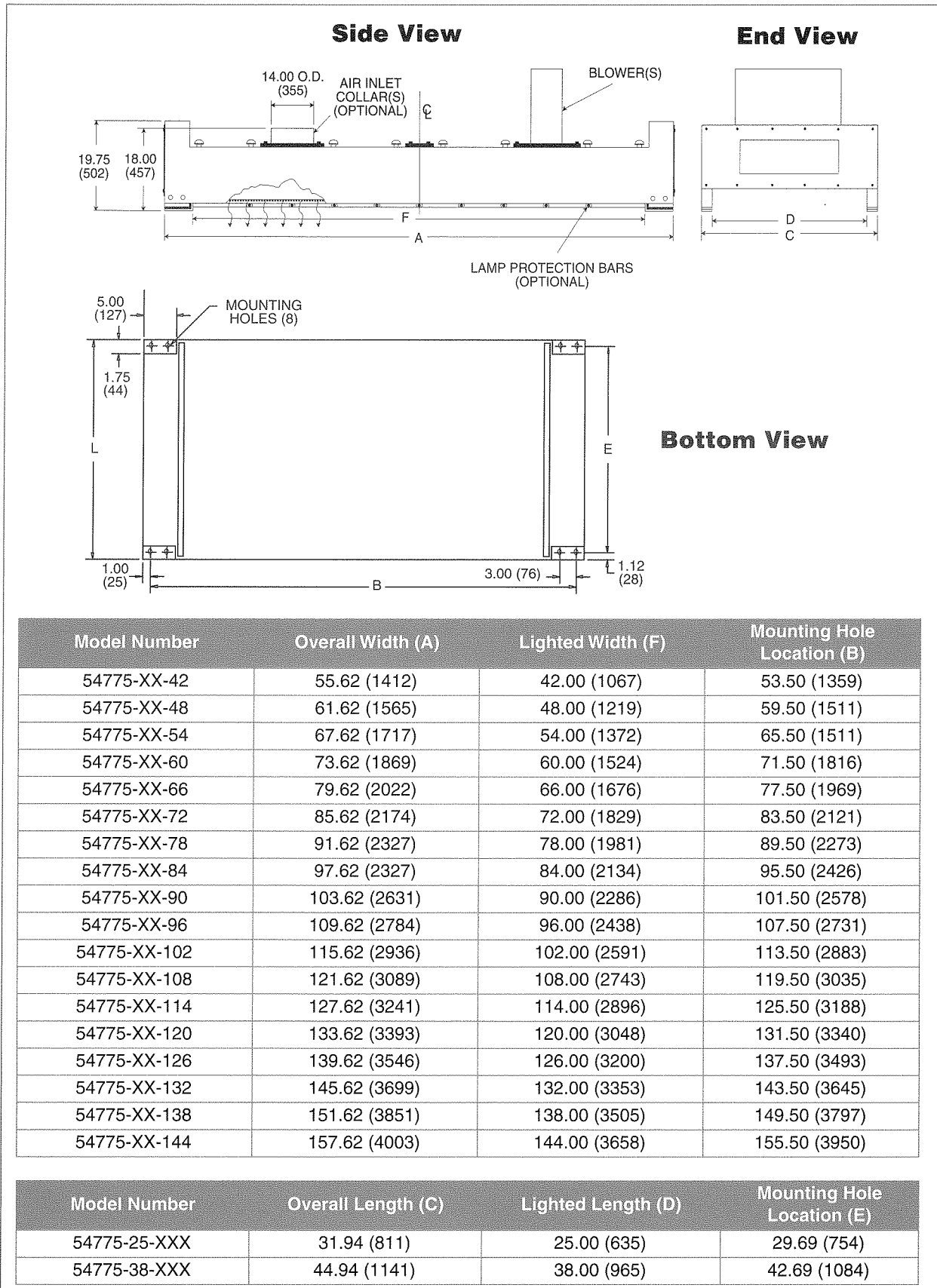


Figure 7: Model 54775 Dimensions [All dimensions in inches (mm)]

## Heaters Available from Research, Inc.

Research, Inc. manufactures a wide variety of radiant heating products. In addition to specialty products for high temperature heating, processing shrink tubing and drying ink-jet printing, the following types of heaters are available:

### SpotIR™ Series

Spot heaters apply heat to a small spot. The spot size of the Model 4085 Spot Heater is 0.25 inch (6 mm). The energy from the Model 4150 Spot Heater is focused 1 inch (25 mm) from the heating unit onto a circular 0.25 inch (6 mm) spot. Some typical applications for spot heaters are listed:

- Soldering and desoldering components
- Local stress relieving
- Brazing
- Igniting remote specimens for laboratory applications



### LineIR™ Series

Using an elliptical reflector, line heaters apply heat to a narrow line. The Model 5193 Line Heater focuses energy from the emitter onto a line from 0.08 to 0.18 inch (2 to 5 mm) wide, 2 inches (51 mm) away from the reflector edge. Line heaters are used for a variety of applications:

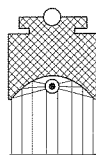
- Heating plastic prior to bending
- Joining plastic or metal
- Soldering and unsoldering electrical components
- Drying marking ink on electronic circuits



### StripIR™ Series

Strip heaters use a parabolic reflector to apply heat to a narrow strip. The Model 5305 Strip Heater concentrates radiant energy on a target strip 1.5 inches (38 mm) wide. The Model 4184 Strip Heater directs energy onto a strip 1.7 inches (43 mm) wide. Some of the uses for strip heaters are listed:

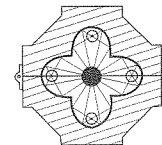
- Heating plastic prior to forming
- Restoring gloss to extruded plastic
- Shrinking plastic caps onto containers
- Curing coatings on panel grooves
- "Glossing" packaged cosmetics



### ChambIR™ Series

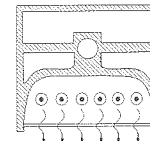
Chamber heaters apply heat to cylindrical areas and in continuous operations. The Model E4 uses an elliptical reflector to heat products up to 2.5 inches (64 mm) in diameter. The Model 4068 Parabolic Clamshell Heater focuses heat onto products up to 9.25 inches (235 mm) in diameter. Chamber heaters are used for a wide range of applications:

- Annealing wire
- Curing silicone medical tubing
- Curing automotive hoses and tubing
- Preheating metal parts prior to plastic coating
- Curing coatings or adhesives on wire or cable
- Thermal stress testing



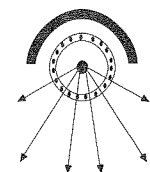
### Hi-TempIR™ Series

High temperature infrared heaters can produce heat flux densities of nearly 700 watts/in<sup>2</sup> and heat targets to 3090°F. The Model 5090 is available in 17 configurations with single or multiple sections to accommodate a variety of different heating requirements. The Model 5208 is available in three sizes and is designed for applications that require very high heat flux densities for relatively short time periods. The Model 5075 is designed for precise heating of material load test specimens.



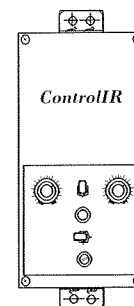
### SimulateIR™ Series

The Model 5236 Space Thermal Simulation Modules are used for efficient irradiation of test vehicle surfaces to simulate the infrared energy generated by the sun, planet reflection, and planet radiation inside a space chamber. Use of these heaters is practical in situations where full spectrum solar simulation is not necessary or may not be economically feasible.



### ControlIR™ Series

All the heaters available from Research Inc. require electrical power control for operation. Phase angle, Silicon Controlled Rectifier (SCR) power controllers are available in different configurations ranging from 20 to 300 amps and 120 to 480 volts. Stand-alone SCRs as well as complete power control systems incorporating web speed control, product detection, and product temperature control are available.



## Typical Infrared Heating Applications

Infrared Heating Application		SpotIR	LineIR	StripIR	PanelIR	ChambIR	Hi-TempIR
Coatings	Gel and Cure Powders				√		
	Dry and Cure Paints				√		
	Dry Inks			√	√		
	Dry Adhesives			√	√		
	Dry Screen Printing				√		
Material Test- ing	Coupon Tests					√	√
	Structural Tests				√		√
Metal Processing	Weld Stress Relief			√	√		√
	Brazing		√			√	
	Spring Stress Relief					√	
	Annealing	√	√			√	
	Super Plastic Forming				√		
Electronics	Soldering/Desoldering	√	√		√		
	Wafer Processing						√
	Thick Film Drying				√		
	Ceramic Processing				√		
	Shrink Insulation			√		√	
	Solder Termination	√	√				
Composites	Curing				√	√	√
	Forming Thermoplastics		√		√		
	Filament Winding	√	√				
Plastics	Welding	√	√				
	Bending and Forming		√		√		√
	"Reglossing"			√	√		

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