

1.0) HEATER SIZING GUIDELINES

Radiant heaters work like the sun to emit radiant heat directly to the space to increase the comfort of the patio guests. Suitable applications include patios, porches, outdoor shopping areas and pathways.

The amount of temperature increase in outdoor patio spaces will be dependent on the following factors:

1. The number of heaters in the space is important to provide good coverage of the area to be heated.
2. Take care not to mount the heaters too low or too close together this can make people directly below the heaters uncomfortable.
3. It is recommended to use a suitable windbreak to reduce the effects of direct wind on the patio. If an area is going to be unprotected and is a breezy location then heaters may need to be located closer together. Wind breaks must be designed to allow fresh air for ventilation.
4. Angling the heaters greater than 30 degrees should be avoided unless the mounting height is low, when the heaters are angled more than 30 degrees the radiant intensity is lower and will reduce the amount of heat felt by the guests.
5. It is recommended to place the heaters in the area of greatest heat loss facing into the patio area.

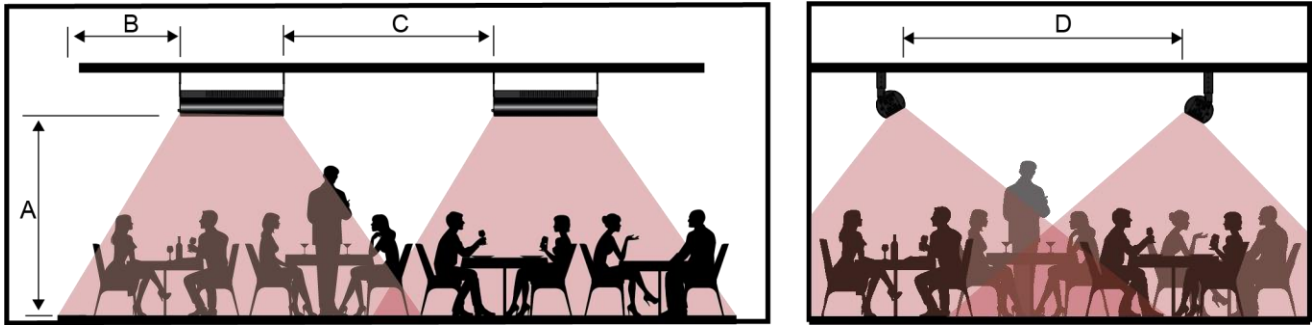
The table below shows minimum area coverage per heater for outdoor patio heating based on a 5 to 10°F (2.8 to 5.6°C) temperature rise.

Mounting Angle	Mounting Height	Breezy Exposed Location	Moderately Protected	Well Protected
Horizontal	8ft. – 11ft. (2.5 – 3.0m)	8 x 8 ft (2.5 x 2.5m)	10 x 10 ft. (3.0 x 3.0m)	12 x 12 ft. (3.7 x 3.7m)
Up to 30 Degrees Angled	7ft. – 9ft. (2.1 – 2.7m)	8 x 8 ft (2.5 x 2.5m)	9 x 9 ft. (2.7 x 2.7m)	11 x 11 ft. (3.3 x 3.3m)
30 to 60 Degrees Angled	6ft. – 8ft. (1.8 – 2.5m)	Not Recommended		8 x 8 ft. (2.5 x 2.5m)

Note: When sizing the number of heaters to warm the patio, the area coverage given above may not provide the stated temperature rise under all weather conditions and will be dependent on heater placement. Minimums are shown as a guideline for human comfort. For more assistance with patio heater sizing and layout please contact your local Sunstar representative.

2.0) TYPICAL HEATER LAYOUTS

The diagram below shows the recommended spacing layout between heaters.

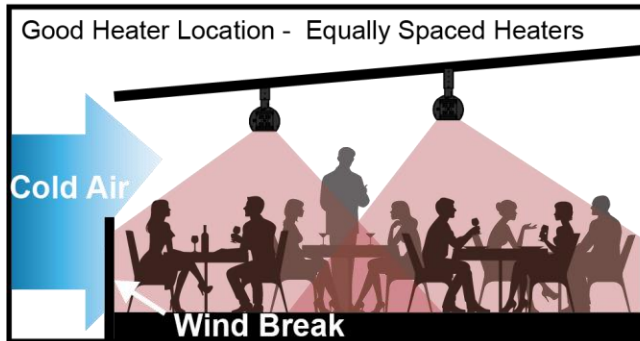
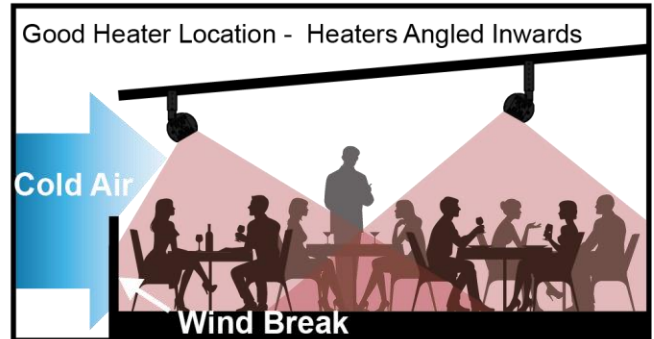
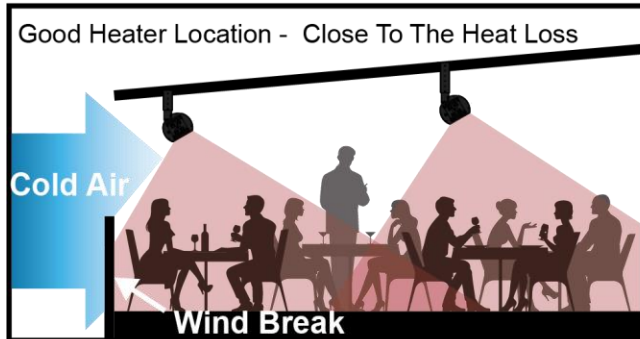
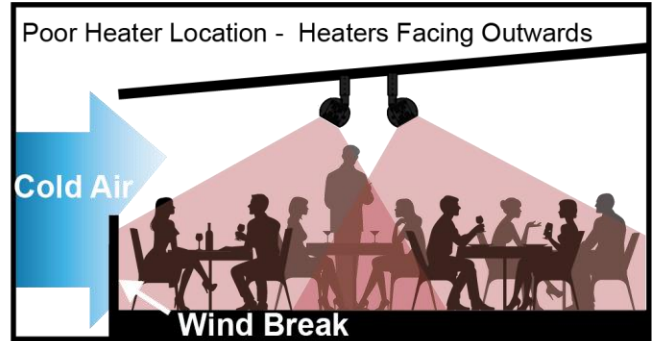


Dimension	Horizontal		15 to 30 degree angle		Above 30 degree angle	
	Min.	Max.	Min.	Max.	Min.	Max.
A. Mounting Height	8ft (2.5m)	11ft (3.4m)	7ft (2.1m)	9ft (2.7m)	6ft (1.8m)	8ft (2.5m)
B. Distance to the end of the patio	0ft (0m)	6ft (1.8m)	0ft (0m)	6ft (1.8m)	0ft (0m)	6ft (1.8m)
C. Distance between heaters.	8ft (2.5m)	12ft (3.7m)	7ft (2.1m)	11ft (3.4m)	6ft (1.8m)	10ft (3.0m)
D. Distance between heaters*	8ft (2.5m)	16ft (4.9m)	8ft (2.5m)	18ft (5.5m)	8ft (2.5m)	16ft (4.9m)

*Note the distance D for angled heaters applies when they are facing towards each other.

Note: Local codes may have special requirements regarding head clearance requirements. Some local codes require all portions of overhead radiant heaters to be located at least 8 feet above the floor.

Below are examples of patio heating applications.



- Positioning Tips**
1. Avoid Direct wind, position wind breaks where possible. Wind breaks must not effect clearance to combustibles or ventilation.
 2. Heaters mounted horizontally will radiate the most heat. The greater the mounting angle the lower the intensity.
 3. Use mounting height and area coverage information to select the correct number of heaters.