



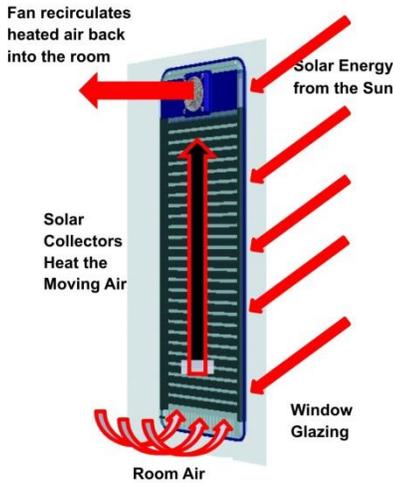
Solar-Infra Systems International Ltd
 209-19138 26th Avenue, Surrey, BC, V3S
 3V7 Canada. Toll Free 1-855-535-2056
 T-604-535-2056 F-604-535-0681
 www.solarinfrasystems.com

OPERATING INSTRUCTIONS
SOLAR THERMAL AIR HEATER
Consumer Model SIS C50M 2448
 Issue 2/12/2014

What is an Air Solar Heater

This SIS air solar heater uses the sun's solar energy to heat air through a window in the home, apartment, cottage, boat, RV, and circulate this heated air in the room. This is not a solar PV panel or solar water heater.

The heater is hung or placed in a south facing closed window inside the room or space to be heated.



IMPORTANT

This SIS solar air heater is designed for interior installation behind a single pane and standard double pane window for best efficiency. Double pane, with low-E, argon, and triple pane will reduce this efficiency to less than 40% to 65%.

The SIS Solar Air Heater, mounted inside the room, behind the window glass, reverses this heat loss, collects the solar heat coming through the glass, and heats the air in the room. Ordinary single glazing works best with an interior Air Solar Heater.

SIS has a range of exterior mount models that are not affected by glass obstruction and are capable of heating an entire house. For more information call 1 855 535 2056 or email us at info@solarinfrasystems.com



Don't forget to fill out the Warranty Card and the Solar Energy Payback Estimator

Window Construction	Radiative Heat Loss (Btu/hr/ft ²)	Conductive Heat Loss (Btu/hr/ft ²)	Total Heat Loss (Btu/hr/ft ²)	Compared to Single Pane Heat Loss
Single Pan Clear	35	21	56	---
Double-Pan Clear	21	13	34	65%
Double-Pan Low-E	5	15	20	36%

This SIS model air solar heater heats air. It is like an electric room convection air space heater except it is operated by the sun's solar energy. Hang or set it in a sun facing window, or side-ways, or even upside down, and it will maintain heat in a large room or area in the home. The heating capacity is equivalent to a 150 to 500 watt electric heater, depending on the daytime sun and cloud cover.

The model air solar heater is also transparent and will still let most of the window sunlight into the room.

Sunlight and a PV panel also operate a fan on the heater. The fan draws the room air into the heater and then pulls the air through metal solar energy collectors heated by the sun. The solar heated air is recirculated back into the room. The fan has a speed control so the air exchange in the room can be set, usually to 1 to 1-1/2 hours, at up to 75 cubic feet per minute.

Also the perfect answer to heating sheds, garages, cottages, and stored boats and RV's where there is limited or no electricity.

Technology and products covered under patents USA 13,082,680, Sept 22, 2014, Canada 2,736,792 Jan 22, 2013 and world patents pending.

The SIS Air Solar Heater Installation

1. Hang, or set on the sill, in a south facing window. The window should be ordinary single glazing.
2. Large glass areas, such as solariums, can have too much heat loss through the glass to the air outside, for this size of SIS air solar heater. It may require more than one heater or a larger model. Please contact us at info@solarinfrasystems.com and we will help you size the solar heating.
3. The Solar Heater can be mounted between the window and a venetian blind. Make sure the blind is open enough to allow fan recirculation into the room.
4. Rooms and home areas usually are planned for 1 to 2 air changes every three hours.
5. The fan capacity is 90 cubic feet of air per minute. Divide this into the volume of the room or heated area and this will show the number of air changes per hour.
6. For example:
Air changes = Room 20ft x 15ft x 10 ft high = 3000 cubic feet volume.

$$\text{Air Changes} = \frac{3000 \text{ cubic ft}}{90 \text{ cu ft/min} \times 60 \text{ min/hr}} = .66 \text{ air changes per hour} \quad (\sim 2 \text{ air changes every 3 hours})$$

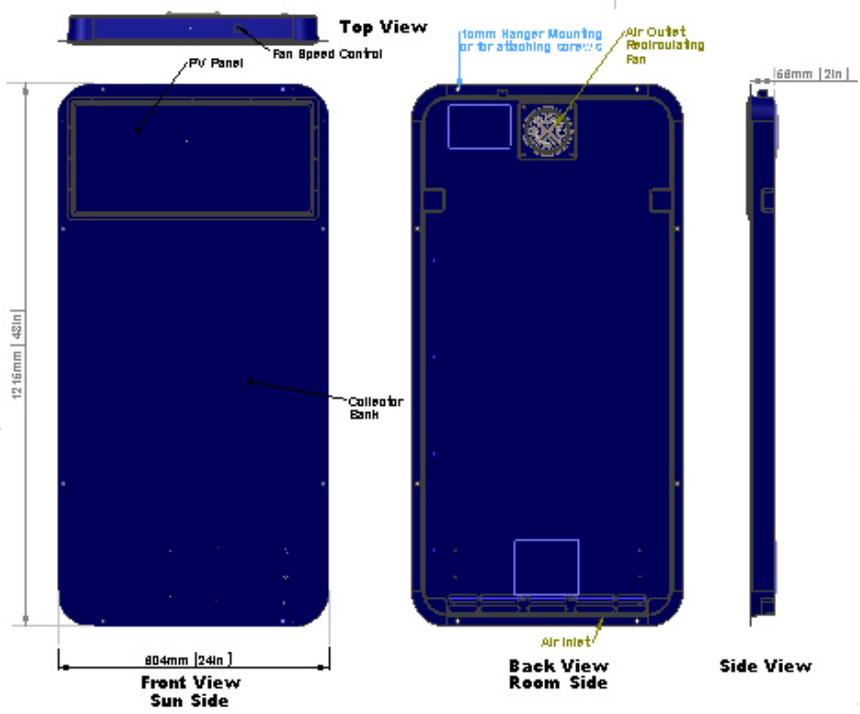
7. Cloudy, low sunlight, or rain conditions may not produce enough Photovoltaic Panel energy on the front of the heater to operate the fan, even though there may be enough solar energy for the heater to add 3-4 degrees to the room temperature
8. **WHAT IS YOUR PAYBACK:** We use a NASA/Government program that calculates the energy savings and heating output in most locations in the world. Email your location, home area, electricity cost per kWh, heating fuel and unit cost, and we will send you the time payback estimate on the savings in energy by using an air solar heater or fill in form at www.solarinfrasystems.com

SIS Model C50M 2448 SPECIFICATIONS

Technology and products covered under patents USA 13,082,680, Sept 22, 2014, Canada 2,736,792 Jan 22, 2013 and world patents pending.

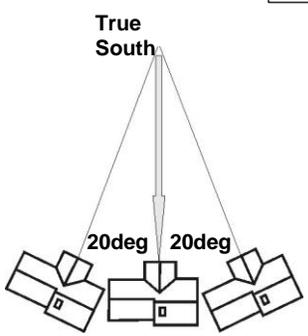
Solar-Infra Systems International Ltd
209-19138 26th Avenue, Surrey, BC, V3S
3V7 Canada. Toll Free 1-855-535-2056
T-604-535-2056 F-604-535-0681
www.solarinfrasytems.com

	US	Metric
Peak Efficiency Ave	80%	80%
Ave Max Daily Power Output ¹	950 btu/hr/sqft	2.99 MWhr/m2
Window Mounting	Single Glaze Std Double Glaze	Single Glaze Std Double Glaze
Heater Mounting Tilt in Window	Vertical (90°)	Vertical (90°)
Azimuth (Direction facing Sun)	0° (Due South)	0° (Due South)
Ave Total Annual Solar Radiation ² - Tilted (90°) 12 mon	3.7mbtu/sqft	1,090 MWh/m2
Total Annual Heating Delivered (9 mon)	5.8 mbtu	1.7 MWhr
Air Flow Range	50-87 cfm	85-145 m3/hr
Max Air Pressure	.111inH2O	2.83mmH2O
Noise Level	35.73db	35.73db
Ave Temperature Increase ³ Sept-May	24.5 °F	13.6°C
Max Air Temperature Increase	122°F	50°C
Solar Collector Infra Red Absorption	95%	95%
Solar InfraRed Transmission Polycarbonate Panel	90%	90%
Number of Staged Solar Collectors	16	16
Staged Collector Projected Area	106.6sqft	9.91m2
Aperture	4.97sqft	.462 m2
PV Panel	20W 18vdc	20W 18vdc
GHG Carbon Saving	0.3 TCO2/yr	0.3 tCO2/yr
Collector Material	aluminum	aluminum
Plastic Panel ⁴ Materials	UL94v-0	UL94v-0
Heater Weight	24.7lbs	12.1 kg



For 4 inch Duct Adapters and Insulating Panel for outside mounting, See D2448 Duct Kit

Sun Orientation



South (or North in the southern hemisphere) facing covers 20 degrees on both sides of a true south. More east catches morning solar and west catches afternoon solar.
Watch for roof eaves that overhang and shade the window and heater as well as trees and buildings that block the sun's path.

1. Based on 80% of solar radiation on 90° tilted heater (vertical) behind single glaze window at 49°N latitude. 9 months of year (Sept to May)
2. RETScreen data (NRC/CanmetENERGY) (NASA solar data)
3. RetScreen 49°N latitude -123.1°E longitude.
4. Underwriter's Laboratories - self extinguishing. Conforms to window and wall covering building stds.

Specifications subject to change without notice.

Waterproof Fan.
Heater can also be mounted outside. See Duct Kit D2446

Don't forget to fill out the Warranty Card and the Solar Energy Payback Estimator

WARRANTY TERMS
If a defect arising solely from faulty hardware, materials or workmanship appears under proper use of this equipment:
For defects in hardware, materials and workmanship, within a period of 12 months from the date of purchase, Solar Infra Systems will repair the defect, or at its option, replace the defective part or parts.

The main exclusions from the warranty are if the equipment has been:

1. Neglected, mishandled or inappropriately used; or
2. Modified or altered in any way except with the prior approval of Solar Infra Systems.

Solar Infra Systems is not liable for any consequential loss.

1. Solar Infra Systems is not liable to the Buyer for any defect unless the Buyer immediately gives Solar Infra Systems notice in writing or email of the alleged defect with full particulars of the operating conditions under which it became apparent and returns this equipment, or relevant part, shipping paid to Solar Infra Systems.
2. Any items returned to Solar Infra Systems are at Buyer's risk. Repaired or replacement items will be despatched shipping paid to the address requested by Buyer.
3. Solar Infra Systems total liability relating to the supply of this equipment is limited to the Buyer's purchase price of the product.

The warranty is given to the Buyer of this equipment from Solar Infra Systems or Solar Infra Systems subsidiaries.
The warranty cannot be transferred by the Buyer to any other person or company.
Contact: email:info@solarinfrasytems.com Tel: Toll Free 1-855-535-2056.