

# How to Calculate The Required Solar Panels & Batteries Needed to Run a SUNSTAR, DOMETIC or SRC Solar Refrigerator

*For optimal use of solar powered equipment, it is essential to understand the maths behind how they work, hence, Solar Refrigerator Company publishes this guide*

ORO VALLEY, AZ, UNITED STATES, February 7, 2023 /EINPresswire.com/ -- Solar Refrigerator Company releases [three new solar refrigerators](#) that are highly efficient. Sunstar ST-16RF 16 cu ft solar fridge comes in two colors, white and stainless steel; DOMETIC stainless steel DMC4101 10 cu ft RV Refrigerator and SRCR450DW stainless steel 15.9 cu ft DC refrigerator. SRC450DW solar refrigerator is currently reduced from \$2,195 to \$2,055 and ships for free for a limited time only to most of the US. DOMETIC DMC4101 retails for \$1,650 and SUNSTAR ST16RF from \$1,699. Alongside these solar refrigerator launches, the company is your one-stop-shop for all solar equipment including [solar panels](#), [solar batteries](#), solar freezers, inverters and charge controllers.



The following is a guide on how to calculate the requirements needed to power any appliance in the home using these three models as examples. With this guide, it is now easy to determine the number of solar panels and batteries required to properly operate an appliance or any electronic product anywhere in the world

In order to determine what is needed to power an electrical product, it is essential to know the average solar hours or peak sun hours of the location where it will be used.

For customers in the United States and Canada, the data for peak sun hours can be obtained via <http://pvwatts.nrel.gov/>. At the top left corner of the website's homepage, next to "Get Started," users will find a text field. Here, US users are expected to enter their zip codes while Canadians should enter their postal codes and click GO.

When the page loads, users need to click "RESULTS," which will take them to a table of results

from January to December. They will see a column showing “Solar Radiation,” which contains the average monthly solar hours for an address spanning the 12 months of the year. If a user plans to run their appliance all year round, they should note the smallest figure of the year. For customers with cabins, for example, that are only used seasonally, record the smallest value in the months of use of the appliance. The number selected will be used as the Average Monthly Solar Hours to be used in the calculations to follow.

People living outside of the US and Canada can find their location’s sun peak hours by visiting <http://solarelectricityhandbook.com/solar-irradiance.html>. Customers are expected to select the country and town or city closest to the area where the appliance will be installed on the webpage. Next, they need to choose the direction in which they plan to install the solar panel. If they do not know that information, they use the ‘Facing directly North’ estimates in the third field.

The website will present the Average Solar Insolation Figures for each month of the year. Users need to record a figure that is the smallest figure of the year, and the number recorded will be used as the Average Monthly Solar Hours to be used in the calculations to follow.

After using either of the above websites to determine the Average Monthly Solar Hours, users can proceed to perform the following calculations:



Power Consumption x 1000

\_\_\_\_\_ = Solar Panel Size (in Watts)

Peak Sun Hours

Most of the product pages on Solar Refrigerator Company's website show the Power Consumption of each model. The DOMETIC DMC4101 10 cu ft RV Refrigerator has a power consumption of 0.9 kWh/day; for the SUNSTAR ST-16RF it is 0.6 kWh/day and the SRC450DW it's 0.72 kWh/day. We will use US zip code 90210 as the location in this evaluation. This location using the [pwwatts.nrel.gov](http://pwwatts.nrel.gov) site has an average peak sun hours of 4.14.

For the DOMETIC DMC4101 RV FRIDGE:

0.9 x 1000

\_\_\_\_\_ = 217.4 watts of panels (excludes 25% solar panel inefficiency)

4.14

Finally, multiply 217.4 by 1.25 = 271.8 (approximate to 220) watts of solar panels, which accounts for inefficiency of 25%. This is the minimum solar panels needed to power this RV refrigerator.

For the SUNSTAR ST16RF solar fridge:

0.6 x 1000

\_\_\_\_\_ = 145 watts of panels (excludes 25% solar panel inefficiency)

4.14

Finally, multiply 145 by 1.25 = 181.3 (approximate to 200) watts of solar panels, which accounts for inefficiency of 25%. This is the minimum solar panels needed to power this solar fridge.

For the SRC450DW solar refrigerator:

$$0.72 \times 1000$$

\_\_\_\_\_ = 174 watts of panels (excludes 25% solar panel inefficiency)

4.14

Finally, multiply 174 by 1.25 = 217.5 (approximate to 220) watts of solar panels, which accounts for inefficiency of 25%. This is the minimum solar panels needed to power this solar refrigerator.

To determine the batteries needed to run an appliance, the key figure used is the power consumption. Please note that a typical 12-volt 100Ah battery has a capacity of 12 volts multiplied by 100Ah = 1200Wh.

The DOMETIC RV refrigerator power consumption is 0.90 kWh/day. The best practice to maintain the longest service life of a solar battery is to avoid discharging more than 50 percent of its total capacity.

Hence, for the DOMETIC RV Refrigerator:

$$0.90 \text{ kWh/day} \times 1000 = 900\text{Wh per day}$$

$900 \times 2 = 1800\text{Wh per day}$ . The multiplication by 2 is because 50% of the battery capacity is half 100%. So, the battery capacity requirement is at least 1800Wh.

Hence,  $1800\text{Wh}/1200\text{Wh} = 1.5$  lots of 12 volts 100Ah/ 150Ah battery.

For the batteries needed to run the SUNSTAR solar fridge:

$$0.60 \text{ kWh/day} \times 1000 = 600\text{Wh per day}$$

$$600 \times 2 = 1200\text{Wh per day}$$

Hence,  $1200\text{Wh}/1200\text{Wh} = 1$  12 volts 100Ah battery is required.

And finally for the SRC450DW solar refrigerator:

$0.72\text{ kWh/day} \times 1000 = 720\text{Wh}$  per day

$720 \times 2 = 1440\text{Wh}$  per day

Hence,  $1440\text{Wh}/1200\text{Wh} = 1.2$  lots of 12 volts 100Ah (or approximately 150Ah) battery.

On the market, you can find 100Ah, 150Ah and 200Ah 12 volt solar batteries. So, your calculations will determine what you should buy for your system.

These calculations can be applied to determine the required solar panels and batteries needed to power anything in a home/ business.

Visit <https://solarrefrigerator.com/> for more information.

Colin Smith

Solar Refrigerator Company

+1 520-200-7330

[email us here](#)

Visit us on social media:

[Facebook](#)

[LinkedIn](#)

[Instagram](#)

---

This press release can be viewed online at: <https://www.einpresswire.com/article/615350545>

EIN Presswire's priority is source transparency. We do not allow opaque clients, and our editors try to be careful about weeding out false and misleading content. As a user, if you see something we have missed, please do bring it to our attention. Your help is welcome. EIN Presswire, Everyone's Internet News Presswire™, tries to define some of the boundaries that are reasonable in today's world. Please see our Editorial Guidelines for more information.

© 1995-2023 Newsmatics Inc. All Right Reserved.