



**Ultra High Efficiency
AC (100 to 240) or DC (Solar)
Refrigerators & Freezers**

With the AC option you can just plug it in!



Table of Contents

Foreword From Avspar	ii
Introduction SunDanzer	1
The Sundanzer Difference	2
Styles	
Chest Refrigerators/ Freezers	3
Dorm Upright Combination Refrigerator/ Freezer	4
Freezer Top Upright Combination	4
Types of Power Systems	
AC powered with backup DC power	5
1) Off- Grid, No Interaction	5
2) On- Grid, Grid Interaction (Grid- Tied)	5
3) Off- Grid. Battery only	5
Common Uses for SunDanzer Refrigerators- Freezers	6
Technical Specifications & Cost Comparison	
165 Liter Chest	7
225 Liter Chest	8
50 Liter Chest	9
Technical Specifications	
Upright Combinations (134 Liter and 399 Liter)	10
Warranty and Closing	11
Contact Information	12



Foreword

From All of Us at Avspar,

Avspar's entry some time ago into renewable energy, solar power, and on/off grid solar DC power equipment led us to some of the finest AC/DC powered equipment in the world – **SunDanzer Refrigeration Equipment**. Since 1999, SunDanzer has provided exceptional products that are meticulously engineered and carefully constructed to produce the most efficient equipment possible. For over a decade SunDanzer has built an outstanding reputation that is known around the world because of their products' durability, ultra efficiency, and well-designed simplicity. We are an authorized manufacturer's distributor for SunDanzer.

As the world begins to embrace all the positive aspects of high efficiency AC/DC and renewable energy, SunDanzer's name will become even more of a household name as SunDanzer has already established itself as the standard by which refrigeration equipment is judged in terms of product efficiency, durability, and simplicity! These products hold the power to serve both ends of the consumer spectrum. These units are perfect for people who live a modern lifestyle and simply wish to reduce cost as well as environmental impact. These products can also be of great assistance to those who need refrigeration as a basic necessity for living because of a lack of access to electrical grid power.

This publication is mainly geared toward the AC application (100 to 240 V AC—50/60 Hz) of SunDanzer equipment and the great potential SunDanzer equipment has for reducing CUSTOMER electrical costs and power consumption. The SunDanzer units are DC power based but have an excellent AC power option (allows AC or DC power) so that they can work almost anywhere in the world on local utility electrical grid power being supplied to homes and businesses. **You can just PLUG IN the SunDanzer AC option installed refrigerator or freezer into the wall socket and use it as you would any refrigerator or freezer.** Please see our DC / AC presentation for expanded details on using this equipment in DC configuration.

While addressing the Energy Costs and Usage benefits of SunDanzer equipment, this presentation also highlights how the units can include secondary emergency operation using DC power (12 or 24 V) through either a solar system or even stand alone 12 or 24 V battery. The most cost effective backup would be the use of a good quality and properly sized 12 V battery for use in emergency situations such as in the event AC grid power is lost.

Welcome to SunDanzer's world of ultra efficient On/Off- Grid refrigeration!

Introduction SunDanzer



SunDanzer was founded in 1999 by the leader of NASA's Advanced Technology Refrigeration Project with the goal of utilizing state of the art technology for solving earth and space related problems involving ultra efficient, reliable, sustainable energy solutions for off-grid refrigeration needs. The NASA technology translated into the world's first and finest solar to battery and battery free solar (known as "solar direct drive") powered refrigeration systems. These same ultra efficient refrigerators/freezers also are available in strictly AC powered versions or AC powered with supplemental backup DC systems.

Save **ENERGY** and **MONEY** with SunDanzer AC and DC powered (Solar – Battery) refrigerators and freezers. These **ULTRA efficient** refrigerators and freezers have **exceptional low energy consumption** which requiring **SMALLER, LESS EXPENSIVE** photovoltaic power (PV) systems when used in an off grid application. All units have the option of coming with auto transfer AC to DC power – so they can be connected to the power grid and can use DC power as backup only OR be used completely off grid as a self sustaining, no additional cost solar power system.

Every SunDanzer is highly engineered and carefully built to provide outstanding energy efficiency and high reliability. Each unit's well developed, austere design provides years and even decades of maintenance free use. Low energy consumption is one key that allows SunDanzer refrigerators and freezers to be very cost effective with renewable energy systems, requiring only a single solar panel in most instances. SunDanzer units automatically operate on either 12 or 24 Volt DC; although an AC with DC backup power option from the factory is available on all models. The AC option will be the primary power source and operate on 100–240 VAC, 50/60 Hz. Also optional are the Solar Direct Drive units that connect directly to the solar panel – no controller or battery is required.

The SunDanzer Difference

As an example, SunDanzer's 165 cubic liter (5.8 cubic ft.) refrigerator runs for an entire day under standard conditions in 21.1° C (70° F) ambient temperatures and uses only 77 Watt hours of power. This is less power than a 100 W incandescent light bulb uses in 1 hour! The 165 liter refrigerator under the same conditions in 32.2° C (90° F) uses only 168 Watt hours of power! Avspar is the exclusive distributor for SunDanzer in Brazil



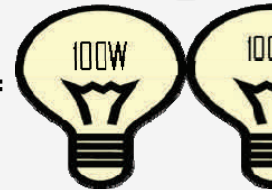
24 hours use at 21.1° C (70° F) outside temperature =

24 hours use at 32.2° C (90° F) outside temperature =

1 hour of use



= 77 Watt hours Per Day



= 168 Watt hours Per Day

One 165 liter refrigerator running for 24 hours at an outside temperature of 21.1° C (70° F) uses 77 Watt hours which is approximately 75% of the power that a 100 Watts light bulb uses in one hour.

Accidentally leaving an 100 Watt light bulb "on" all day is the equivalent power for running this 165 liter refrigerator for 30 days in 21.1° C (70° F) ambient temperatures!

Styles

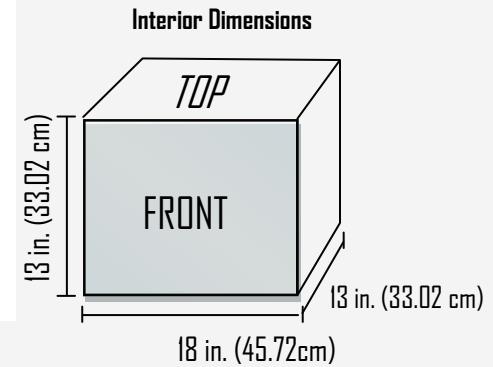
SunDanzer offers four styles of refrigerators and freezers – Chest – Dorm Upright – Freezer Top Upright– Commercial/ Industrial

Chest Style

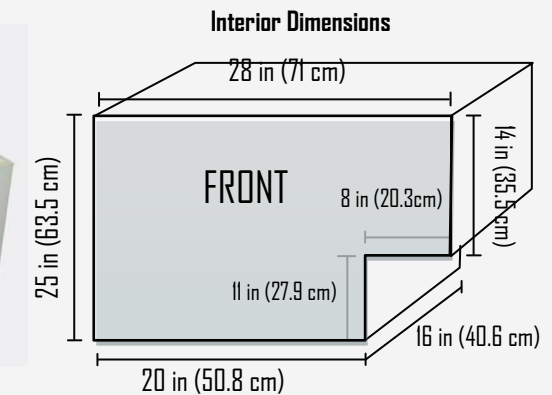
The Chest style unit's interior cabinet is reached by opening the door from a hinged top. Moveable baskets are available for easy storage and movement within the main cabinet. Three sizes are available in either the freezer or refrigerator unit. Each Unit features:

- ◆ All units are 100 to 240 VAC, 50/60 Hz primary capable with DC solar or battery run backup systems
- ◆ High quality design and construction provide for excellent durability, reliability, and long life
- ◆ Super insulated cabinets feature 11 centimeters (4.33 inches) of polyurethane insulation
- ◆ Powder-coated galvanized steel exterior and aluminum interior
- ◆ Rugged scratch resistant galvanized steel exterior
- ◆ A zero maintenance, brushless, thermostatically controlled DC compressor operates on 12 or 24 VDC.
- ◆ Patented low-frost system reduces frost and moisture build up for low maintenance.
- ◆ Easy to clean using the drain hole at the bottom of the unit.
- ◆ Simplistic design = minimum amount of electronics & parts, insures reliability & long life
- ◆ Can be maintained, if ever necessary, by owner . Easily serviced in the field.
- ◆ Thermostat, if it ever fails in the field, can easily be replaced with only a screwdriver and a wrench. Even under thermostat failure, the unit can be "jumped" and will still operate.
- ◆ SunDanzer units have been operating for years and years in the remotest spots of Africa, Asia, Central America, and South America under all types of conditions!
- ◆ Environmentally friendly CFC free refrigerant (R-134a)
- ◆ Lockage lid with interior light (not available on the 50 liter unit)
- ◆ Automatic control with adjustable thermostat- Baskets for food or item organization

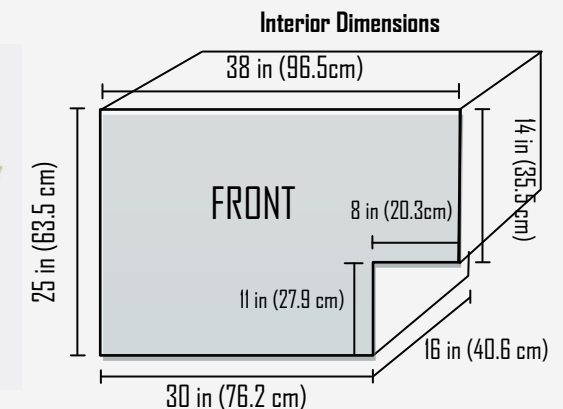
50 Liter (1.8 cu. ft.)



165 Liter (5.8 cu. ft.)



225 Liter (8.1 cu. ft.)



Styles

Dorm Upright Combination Refrigerator/ Freezer

Dorm Upright is a single door upright combination unit that can be used anywhere that a large chest style unit is not practical. Although the dorm style unit has a small "footprint", it still provides 134 liters (4.7 cubic feet) of storage capacity. The built in freezer compartment is perfect for making ice and storing small frozen items. This unit has a reversible door and handle, dairy compartment, and vegetable crisper. It comes standard with two adjustable safety glass shelves and adjustable legs for leveling freezer compartment as well as moveable trays. While the 134 liter model does not employ the same 110 centimeters (4.3 inches) of polyurethane insulation that the chest style units have these units are highly insulated. This unit is a modified, second party manufactured cabinet with an optimized refrigeration system that provides 49- 72% more efficiency than other dorm style refrigerator/ freezer on the market.

- ◆ 12 /24 VDC or 100-240 VAC 50/60 Hertz with 12/24 VDC solar or battery backup
- ◆ Scratch resistant top doubles as work surface
- ◆ Internal thermostat and temperature controls
- ◆ Environmentally Friendly CFC- free refrigerant (R-134a)
- ◆ Zero maintenance, brushless, thermostatically controlled DC compressor
- ◆ Well insulated and refrigeration system optimized for on or off- grid applications
- ◆ Adjustable shelves, reversible door and handle

Freezer Top Upright **COMING 2011...**

The Upright combination refrigerator/ freezer is being introduced in summer 2011. This unit is a 399 Liter (14.1 cubic foot) traditional style household unit with separate top freezer and bottom refrigerator compartments. The top freezer compartment has a split shelf setup. The refrigerator compartment has three moveable shelves and a vegetable crisper compartment. The refrigerator doors offer 6 moveable shelves and 1 covered shelf. This unit being introduced in mid-2011 and full details will be available after its extensive testing is completed. This Unit is exceptionally insulated to promote high efficiency with low system costs and as always it is built to last. This unit's design and engineering offers superior durability, ultra efficiency, and ergonomic function.

More details coming soon!



Power Type

AC Powered System with DC Backup Power

Almost all of SunDanzer's units can be ordered with the optional Alternating Current (AC) system that uses 100 to 240 Volt AC, 50/ 60 HZ electrical power that is supplied into homes, business, and buildings by a Utility company's power grid. This setup is not stand alone like the strictly solar powered DC systems, however it represents significant reduction in utility consumption over regular AC appliances because of the ultra-high efficiency of the SunDanzer units. When the AC system is ordered, it becomes the primary system used to power the unit. In the event the AC power is lost (weather, power outage, etc.) the unit automatically switches over to using DC power. When the standard AC power returns, the unit switches back over to AC power automatically.

With the AC with DC Backup Power there are essentially three options:

1. Option one is running the unit with AC power with the backup DC power coming from a DC powered solar system : solar panel / controller / battery. In this configuration the battery can be expected to last over 13 years with normal use.
2. Option two is an extension of the primary AC system with DC backup where the solar/battery system can be grid-tied to the main utility power grid at the junction box through the use of an inverter. The system can then be programmed to draw off any specifically set power allowances per day from the solar- battery system. The energy that the solar system produces is then routed to the junction box, reducing household utility power usage and in some cases selling power back to the utility company. This cycling will reduce the battery life down to a projected 7.67 year life use, however, the system can be controlled to insure long battery life or a larger battery can be used to compensate for the extra discharge. * Option 2 is not diagrammed below, for any questions please inquire with us.
3. Option three is a basic emergency system that involves using an adequately sized 12 or 24 Volts Direct Current (VDC) battery that is properly checked and charged occasionally. In the event of an AC power outage, the battery can then be connected to the SunDanzer unit. A good quality AGM technology 12 VDC battery of 258 amp hours would then run a 165 liter refrigeration for **9 days** even in 32.2° C (90° F) degree ambient temperatures with a 50% discharge of the battery (never discharge a non-deep cycle battery more than 50% of its capacity as it significantly shortens the life of the battery) under normal use. In 21° C (70° F) ambient temperature this same battery at 50% discharge would run the refrigerator for between **14 days to 18 days** depending on refrigerator use (such as frequency and duration of door openings etc.)

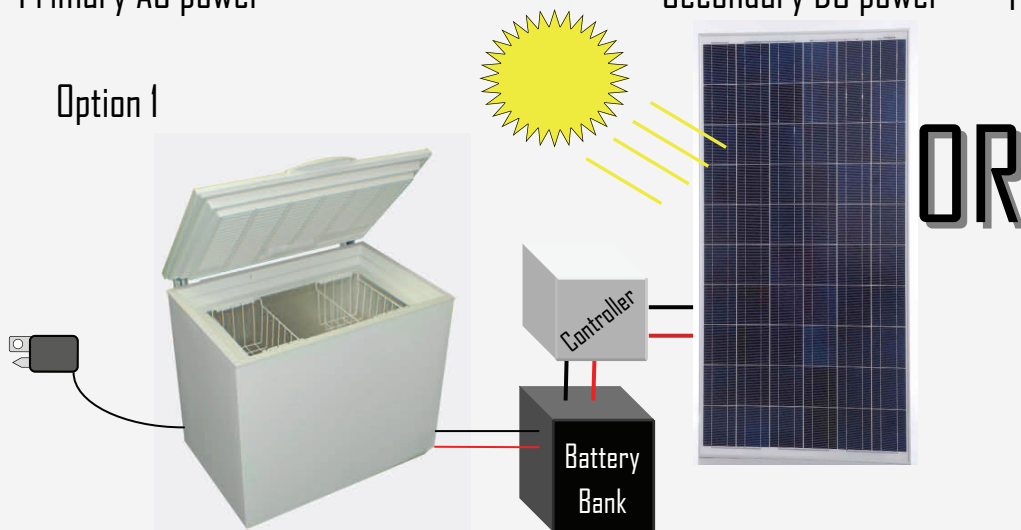
Primary AC power

Secondary DC power

Primary AC power

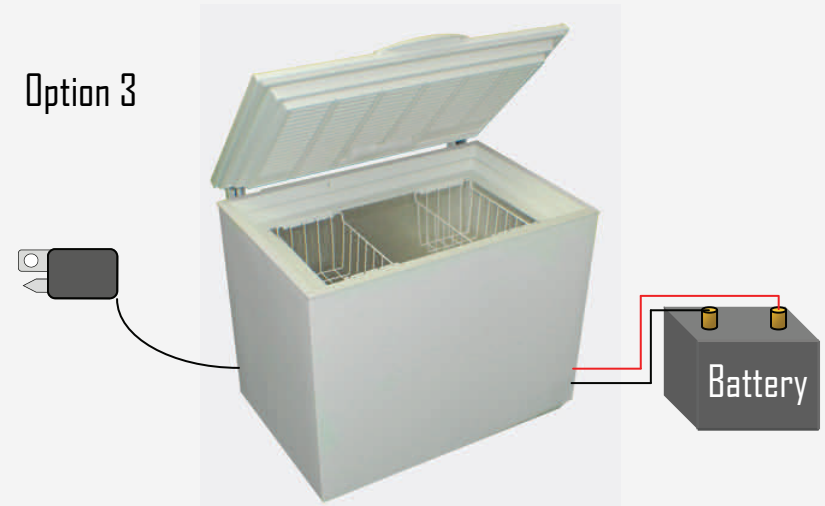
Secondary DC power

Option 1



OR

Option 3



Common Uses for SunDanzer Refrigerators/ Freezers

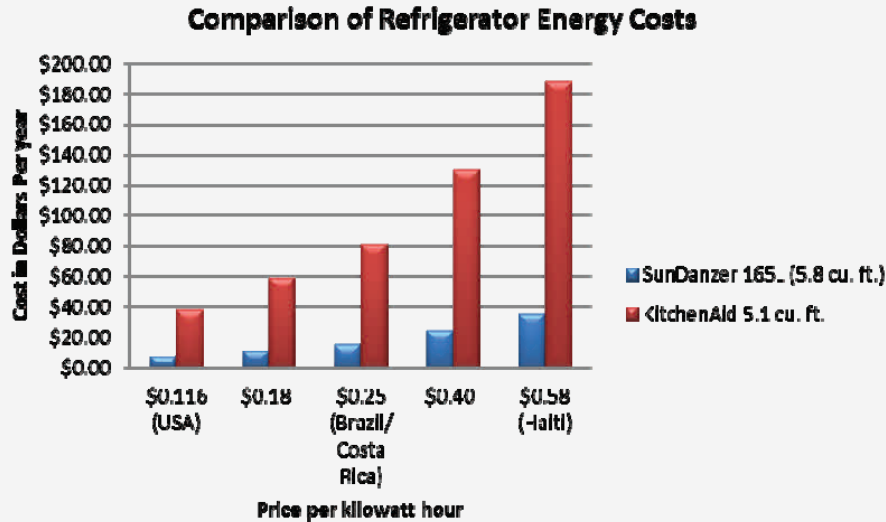
Solar powered refrigerators/ freezers can be used in almost any application and sometimes may be the only option for basic, necessary preservation. These units have applications in every sector; ANYWHERE that Environmentally – Financially Minded Individuals, or Unreliable AC Power Grid power exists, OR is already at maximum capacity already, OR where NO AC power grid even exists!!!

<u>Personal</u>	<u>Civilian-Government/ NGO</u>	<u>Military</u>	<u>Commercial– Industry</u>
Environmentally conscious	Medical Clinics	Bases (remote or otherwise)	Businesses
Financially minded	Schools -Churches	Border Patrol Camps	Government (Federal, State, Local)
Main Homes	Markets – Stores	Rapid Deployment Units	Schools
Remote Homes	Remote Villages	Remote Camps	Hospitals
Farms	Relief Work- Missionary	Mobile Camps	Environmental good will
Boats – Marine	Temporary Housing	Ships	Utility cost savings
Camps	Permanent Housing	Base - Camp Housing	Limited grid
Cabins	Disaster Preparedness	No AC grid	
Missionary Work	Vaccine Storage		
Micro-Enterprises	Stationary or Mobile Cold Chains		
Ice Making	Eco-Resorts		
Beverage Vendors	Maxed AC grid		
No AC Grid	No AC grid		
Unreliable AC grid	Incarceration Facilities		

Technical Specifications & Cost Comparison 165Liter (5.8 cu. ft.)

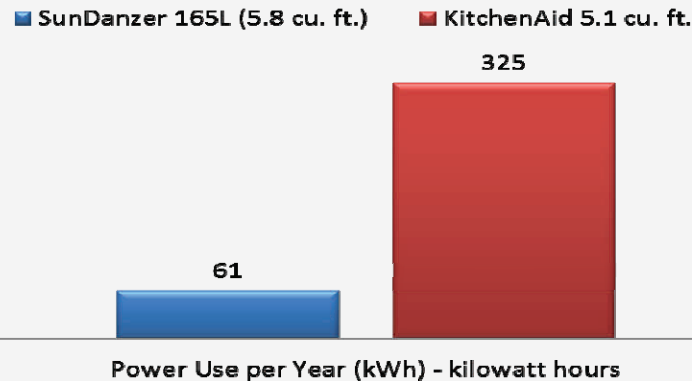


The graph to the right shows a comparison of energy costs per year at different prices per kilowatt hour. The super efficiency of the AC powered SunDanzer unit directly translates to yearly energy cost savings of more than 80% when compared to the KitchenAid unit. **When powered by the Avspar solar kit the SunDanzer unit will require no outside power and reduce yearly energy cost to ZERO!**



Model Refrigerator:	DCR165
Model Freezer:	DCF165
Gross Capacity:	165 Liters (5.8 cubic feet)
Voltage Input Range:	100- 240 VAC (10-31.5 VDC)
System 12 VDC:	10.4 to 17 VDC
System 24 VDC:	22.8 to 31.5 VDC
Ambient Temperature Range:	10° to 43° C (50° to 109° F)
Refrigerator Temperature Range:	-1° to 9° C (30° to 48° F)
Freezer Temperature Range:	-18° to -5° C (0° to 23° F)
Optional 12 VDC solar backup:	YES
Optional 12VDC Battery backup:	YES
Exterior Dimension:	
LxWxH inches	36.8 x 26.2 x 34.5
LxWxH centimeters:	93.5 x 66.5 x 87.6
Shipping Dimensions:	
LxWxH inches:	40 x 30 x 37
LxWxH centimeters:	102 x 76 x 94

Comparison of Refrigerator Yearly Energy Use



The graph to the left shows a comparison of the SunDanzer 165 liter (5.8 cu. ft.) chest refrigerator and the KitchenAid 5.1 cu. ft. upright refrigerator, Model KDDC24RVS. In one year the AC powered SunDanzer uses less than a fifth of the power that the KitchenAid unit uses. When powered by the Avspar solar kit the SunDanzer unit will require no outside power therefore reducing the power use per year to **ZERO!**

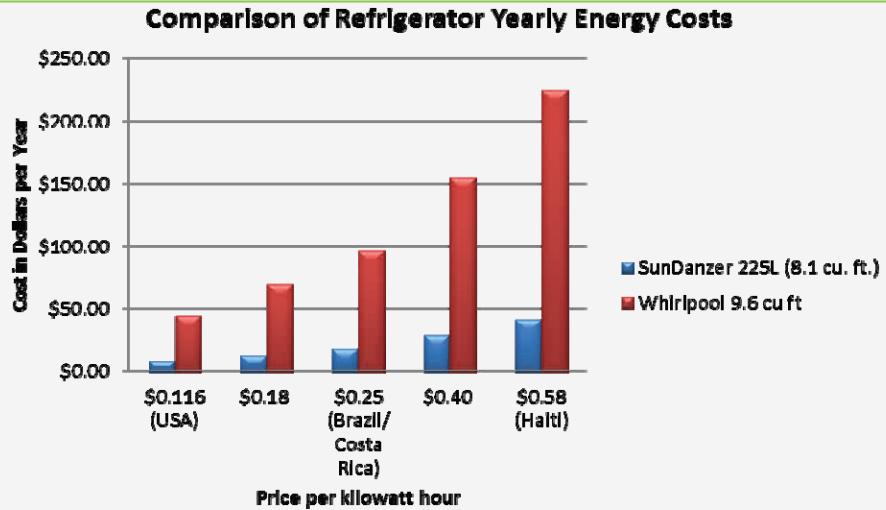
Energy Use: DCR165 Refrigerator*: 168 Watt hours per day at 32.2° C (90° F)
 DCF165 Freezer*: 441 Watt hours per day at 32.2° C (90° F)

*These are based on standard conditions 32.2° C (90° F) ambient temperature during the 24 hours, no door openings, refrigerators set to 3° C (38° F) and freezers set to -12° C (10° F). Lower ambient temperatures (for example, 21.1° C (70° F) with the 165 liter refrigerators and freezers, would reduce standard condition power requirements to 77 and 272, Watt hours per day, respectively. Likewise, increase ambient temperatures of 43.3° C (110° F) in standard conditions would raise energy consumption to 348 and 766 Watt hours per day, respectively. For residential or commercial use increased power requirements should be expected based on various use factors, number of door openings and duration of openings, a difference temperature setting, is unit receiving any direct sunlight exposure, etc. Although a 24 hour ambient temperature of 32.2° C (90° F) would rarely be realized anywhere in the world, additional outside variables should be integrated into any project.

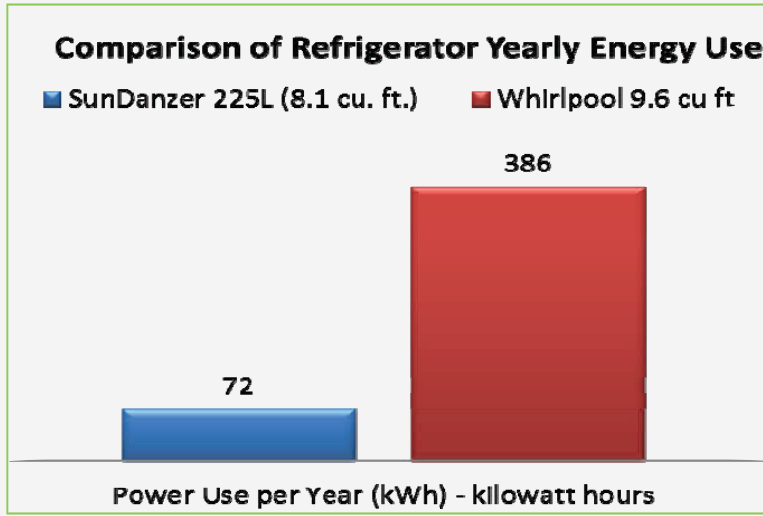
Technical Specifications & Cost Comparison 225 Liter (8.1 cu. ft.)



The graph to the right shows a comparison of energy costs per year at different prices per kilowatt hour. The super efficiency of the AC powered SunDanzer unit directly translates to yearly energy cost savings of more than 80% when compared to the Whirlpool unit. **When powered by the Avspar solar kit the SunDanzer unit will require no outside power and reduce yearly energy cost to ZERO!**



Model Refrigerator:	DCR225
Model Freezer:	DCF225
Gross Capacity:	225 Liters (8.1 cubic foot)
Voltage Input Range:	100- 240 VAC (10-31.5 VDC)
System 12 VDC:	10.4 to 17 VDC
System 24 VDC:	22.8 to 31.5 VDC
Ambient Temperature Range:	10° to 43° C (50° to 109 ° F)
Refrigerator Temperature Range:	-1° to 9° C (30° to 48° F)
Freezer Temperature Range:	-18° to -5° C (0° to 23° F)
Optional 12VDC solar backup:	Yes
Optional 12VDC battery backup:	No
Exterior Dimension:	
LxWxH inches:	46.9 x 26.2 x 34.5
LxWxH centimeters:	119 x 66.5 x 87.6
Shipping Dimensions:	
LxWxH inches:	50 x 30 x 37
LxWxH centimeters:	127 x 76 x 94



The graph to the left shows a comparison of the SunDanzer 225 liter (8.1 cu. ft.) chest refrigerator and the Whirlpool 9.6 cu. ft. upright refrigerator/freezer, Model ETOMSRX. Because of the extreme rarity of a stand alone refrigerator unit, this unit is used. The Whirlpool has a 2.6 cu. ft. freezer and a 7 cu. ft. refrigeration area. In one year the AC powered SunDanzer uses less than a fifth of the power that the Whirlpool unit uses. When powered by the Avspar solar kit the SunDanzer unit will require no outside power therefore reducing the grid power use per year to **ZERO!**

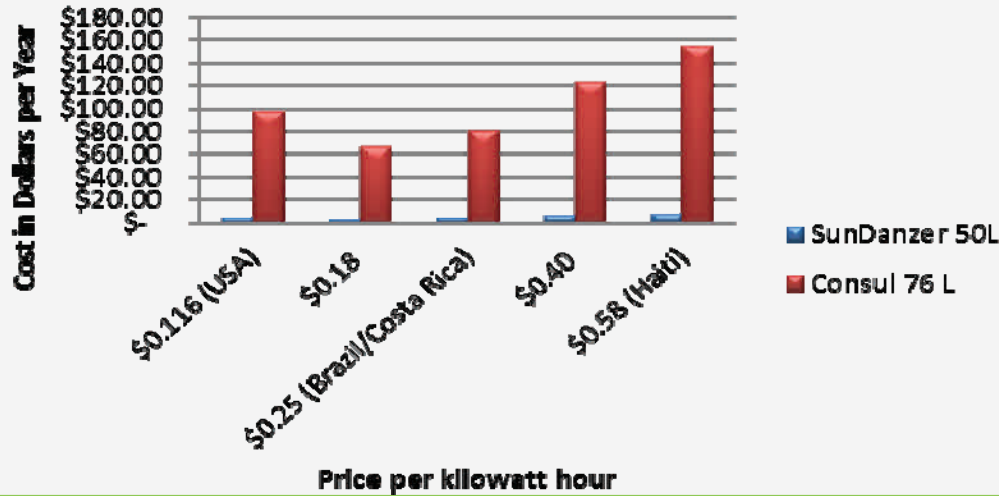
Energy Use:	DCR225 Refrigerator*: 198 Watt hours per day at 32.2° C (90° F)
	DCF225 Freezer*: 532 Watt hours per day at 32.2° C (90° F)

*These are based on standard conditions 32.2° C (90° F) ambient temperature during the 24 hours, no door openings, refrigerators set to 3° C (38° F) and freezers set to -12° C (10° F). Lower ambient temperatures (for example, 21.1° C (70° F) with the 225 liter refrigerators and freezers, would reduce standard condition power requirements to 90 and 360 Watt hours per day, respectively. Likewise, increase ambient temperatures of 43.3° C (110° F) in standard conditions would raise energy consumption to 393 and 817 Watt hours per day, respectively. For residential or commercial use increased power requirements should be expected based on various use factors, number of door openings and duration of openings, a difference temperature setting, is unit receiving any direct sunlight exposure, etc. Although a 24 hour ambient temperature of 32.2° C (90° F) would rarely be realized anywhere in the world, additional outside variables should be integrated into any project.

Technical Specifications & Cost Comparison 50 Liter (1.8 cu. ft.)

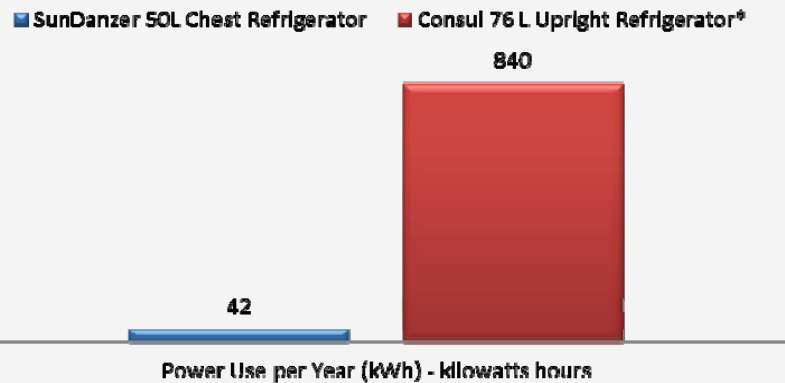


Comparison of Refrigerator Yearly Energy cost



The graph on the left highlights the difference in yearly energy costs per kWh at different rates. The SunDanzer unit's low power consumption translates to significantly lower annual power costs when compared to the 76 liter Consul unit.

Annual Power Use Comparison



The Graph to the left illustrates the difference in yearly power use between the 50 liter SunDanzer chest refrigerator and Consul CRC08AB - 76 liter upright refrigerator in kilowatt hours. The SunDanzer unit uses 95% less power than the Consul upright refrigerator per year.

Model Refrigerator:	DCR50
Model Freezer:	DCF50
Gross Capacity:	50 Liters (1.8 cubic foot)
Voltage Input Range:	100- 240 VAC (10-31.5 VDC)
System 12 VDC:	10.4 to 17 VDC
System 24 VDC:	22.8 to 31.5 VDC
Ambient Temperature Range:	10° to 43° C (50° to 109 °F)
Refrigerator Temperature Range:	-1° to 9° C (30° to 48° F)
Freezer Temperature Range:	-18° to -5° C (0° to 23° F)
Optional 12VDC solar backup:	Yes
Optional 12VDC battery backup:	Yes
Exterior Dimension:	
LxWxH inches:	26.5 x 23 x 30.5
LxWxH centimeters:	67.3 x 58.4 x 77.5
Shipping Dimensions:	
LxWxH inches:	27.5 x 24.5 x 36.5
LxWxH centimeters:	70 x 76 x 92.7

Energy Use: DCR 50 Refrigerator*: 114 Watt hours per day at 32.2° C (90° F)
DCF 50 Freezer*: 280 Watt hours per day at 32.2° C (90° F)

*These are based on standard conditions 32.2° C (90° F) ambient temperature during the 24 hours, no door openings, refrigerators set to 3° C (38° F) and freezers set to -12° C (10° F). Lower ambient temperatures (for example, 21.1° C (70° F) with the 50 liter refrigerators and freezers, would reduce standard condition power requirements to 67 and 169 Watt hours per day, respectively. Likewise, increase ambient temperatures of 43.3° C (110° F) in standard conditions would raise energy consumption to 159 and 409 Watt hours per day, respectively. For residential or commercial use increased power requirements should be expected based on various use factors, number of door openings and duration of openings, a difference temperature setting, is unit receiving any direct sunlight exposure, etc. Although a 24 hour ambient temperature of 32.2° C (90° F) would rarely be realized anywhere in the world, additional outside variables should be integrated into any project.

Technical Specifications

Upright refrigerator/ freezers

134 Liter (4.7 cu. ft.) Dorm Upright refrigerator/ freezer



*These are based on standard conditions 32.2° C (90° F) ambient temperature during the 24 hours, no door openings.

Model	DCRF134
Gross Capacity:	134 Liters (4.7 cubic feet)
Interior Refrigerator capacity:	115 Liters (4.0 cubic foot)
Interior Freezer Capacity:	19 liters (.7 cubic foot)
Voltage Input Range:	100- 240 VAC (10-31.5 VDC)
Ambient Temperature Range:	110° to 43° C (50° to 109 ° F)
Refrigerator Temperature Range:	-1° to 9° C (30° to 48° F)
Freezer Temperature Range:	-18° to -5° C (0° to 23° F)
Optional 12 VDC solar backup:	Yes
Optional 12 VDC battery backup:	Yes
Exterior Dimension:	
LxWxH inches:	23.5 x 26 x 33
LxWxH centimeters:	60 x 66 x 84

Energy Use: 134 Liter DCRF134 Refrigerator / Freezer*:
480 Watt hours per day at 32.2 C (90 F)

Standard Features

- ◆ **100- 240 VAC primary power system with DC backup Solar or Battery system**
- ◆ 49-72% more efficient than other models on the market
- ◆ Well insulated low energy consumption
- ◆ Highly optimized refrigeration system
- ◆ Powder coated, galvanized steel exterior is rugged and easily cleaned
- ◆ Scratch resistant top doubles as a work surface
- ◆ Automatic control with adjustable thermostat
- ◆ Two adjustable safety glass shelves
- ◆ Dairy compartment and vegetable crisper
- ◆ Designed with simplicity in mind
- ◆ Environmentally Friendly, CFC free refrigerant (R134a)
- ◆ 49-72% more efficient than other models on the market



Freezer Top Upright **COMING 2011...**

The Upright combination refrigerator/ freezer is being introduced in summer 2011. This unit is a 399 Liter (14.1 cubic foot) traditional style household unit with separate top freezer and bottom refrigerator compartments. The top freezer compartment has a split shelf setup. The refrigerator compartment has three moveable shelves and a vegetable crisper compartment. The refrigerator doors offer 6 moveable shelves and 1 covered shelf. This unit being introduced in mid-2011 and full details will be available after its extensive testing is completed. This unit is exceptionally insulated to promote high efficiency with low system costs and as always it is built to last. The unit's compartments and refrigeration system have been optimized for ultra efficiency.

Full details coming soon!

Warranty & Closing



Avspar is totally committed to bringing high efficiency AC and solar DC powered equipment to all people who wish to contribute to a more eco-friendly existence. We serve those who understand the harmony, balance, and responsibility we all share in the world and to each other today as well as future generations. While one might question such idealism, one can not ignore a basic fact - it makes total economic sense! We need to integrate ultra-efficient AC and DC equipment into every aspect of our lives! Our work and efforts are especially heartfelt for those around the world who might otherwise not have the opportunity for establishing basic human comforts. These comforts such as DC powered: refrigeration, lighting, ceiling fans, portable fans, air conditioning, power on demand, and yes, even solar stoves or heating equipment. If necessities such as basic cooling and heating are met, then those who at once were merely surviving can now focus their energies on learning, personal growth, economic advancement, and community development; all of which work toward making each of our existences a peaceful, united, and harmonious journey forward.

Avspar believes 100% in SunDanzer refrigeration products and our high quality, long life systems. We offer a complete line of other ultra efficient AC and DC powered equipment. These solar power systems are flexible and can be used interchangeably. For example, a 380 Watt power system could be used with one 50 liter refrigerator and one 50 liter freezer and has the ability to power some DC powered LED lights, and/or ceiling- portable fans, or other DC powered equipment, from the same system with nothing more then perhaps an upgraded (larger) battery bank to ensure the minimum (7.67 years) years with a single battery! Avspar can provide solar power systems to meet any size energy requirements for residential or commercial projects, whether running it straight as DC power and DC equipment, or having DC power converted into standard AC power.

Avspar also provides industrial size technical and development assistance for whole community solar power projects, ranging in size from a minimum of 250 kilowatts (250,000 Watts), with typical ranges in size of 1 to 5 megawatts (1,000,000 to 5,000,000 Watts). These projects use the very latest, high efficiency PV arrays which only use 1/1000th the active solar material found in standard Silicon PV panels; itself a further eco-friendly and more cost effective system!

Avspar donates a portion of ALL corporate profits to providing this technology, equipment, and systems to those who are unable to procure it otherwise.

Avspar is an authorized manufacturer's distributor for SunDanzer, the charge controllers, and batteries.

All equipment and products supplied with Avspar kits come with the original equipment manufacturer's warranty and their warranty terms and conditions which can be read and downloaded from our website. The main components of our kits and their general warranty information are as follows:

Refrigerators / Freezers – come with full 2 year warranty

Charge Controllers – come with a full 5 year warranty

Solar (PV) Panels – come with a full 5 year warranty, and are warranted on a pro-rated basis if they fail to meet 90% of their rated power at 10 year, and 80% of their power at 25 years.

Batteries - come with 18 months warranty after date of purchase, 12 months warranty after date of installation.

Contact Information



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