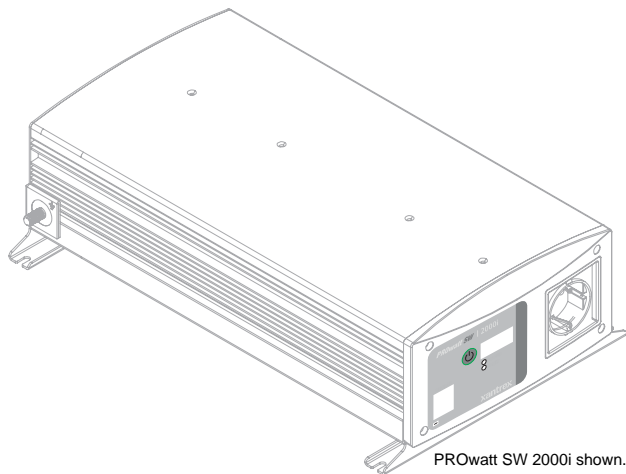


Smart choice for power™



PROwatt SW 2000i shown.

PROwatt™ SW Sine Wave Inverter

230 Volt AC Output. For use with
12 Volt Battery Systems Only.

xantrex™



Owner's Guide

PROwatt SW 700i
PROwatt SW 1400i
PROwatt SW 2000i

Features

The following information describes the main features of the PROwatt SW. We recommend that you familiarize yourself with these features before installing and operating the unit.

Materials List

Your PROwatt SW package includes these items:

- PROwatt SW unit
- Owner's Guide

If any of these materials are missing or are unsatisfactory in any way, please contact Customer Service (see "Contact Information" on page i of this guide).

Optional Accessory

The PROwatt SW can also be installed with a remote ON/OFF switch that comes with a 25-foot (7.6 m) communications cable (part number 808-9001).

For ordering information, please contact Customer Service (see "Contact Information" on page i of this guide). Please reference the part number above when ordering.

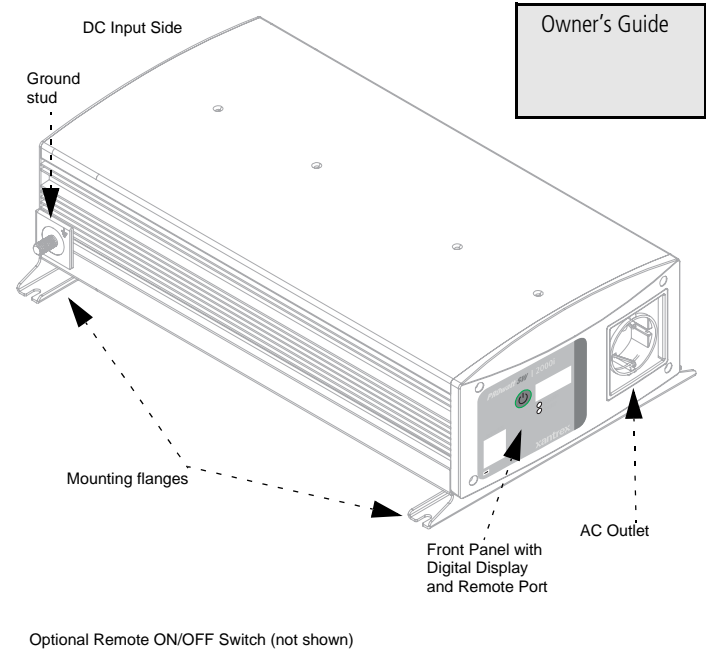


Figure 1 PROwatt SW (PROwatt SW 2000i shown)

Front Panel Details

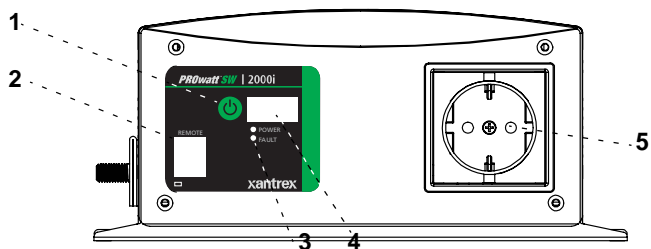


Figure 2 PROwatt SW 2000i shown^a

a. PROwatt SW 1400i front panel similar

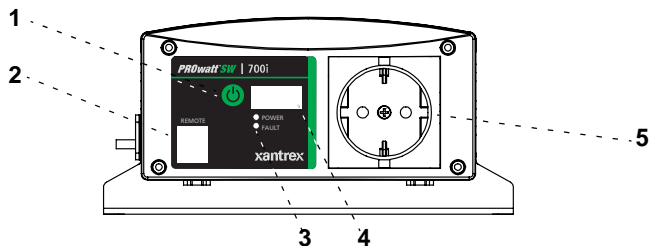


Figure 3 PROwatt SW 700i

Feature	Description
1	Power Switch Button Turns the inverter ON or OFF.
2	Remote Switch Port Use to connect the optional remote ON/OFF switch via a communications cable.
3	Indicator LEDs Green LED indicates that the unit is on. When a shutdown occurs due to an error condition the Green LED turns off. Red LED indicates an error or alarm condition.
4	Digital Display Shows input voltage (in volts), output power (in kilowatts), and error code information.
5	AC Outlet Equipped with one AC outlet.

Back Panel Details

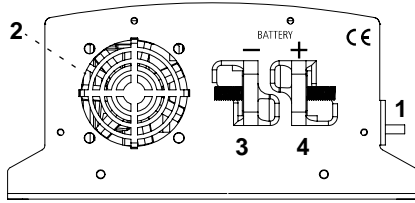


Figure 4 PROwatt SW 700i shown

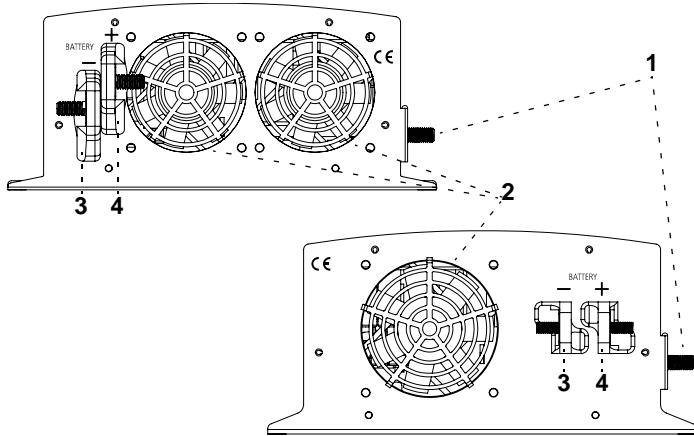


Figure 5 PROwatt SW 2000i (left), PROwatt SW 1400i (right)

Feature	Description
1	Chassis Ground (GND) Terminal
2	Cooling Fan/s Automatically turns on when internal temperature reaches more than 50 °C (122 °F). It turns off when the internal temperature falls below 50 °C (122 °F).
3	Negative (-) DC Terminal Accepts lug or ring connectors appropriate to the cable size being used. See Table 1 : Voltage Drop Per Foot of DC Cable on page 10 for recommendations.
4	Positive (+) DC Terminal Accepts lug or ring connectors appropriate to the cable size being used. See Table 1 : Voltage Drop Per Foot of DC Cable on page 10 for recommendations.

Cabling Guidelines

Follow these guidelines and refer to Table 1 : Voltage Drop Per Foot of DC Cable on page 10 to determine battery cable lengths.

- Use 4 AWG copper (90 °C insulation rating) as the smallest battery cable size. This will minimize the voltage drop between the battery and the inverter. If the cables cause an excessive voltage drop, the inverter may shut down when drawing higher currents because the voltage at the inverter input drops below 10.5 volts.
- Keep all cables as short as possible, and ensure that each cable between the inverter and the battery is no longer than 6 feet (1.8 m).
- Have all wires and cables terminated with correct and appropriately-sized connectors and have the connectors crimped at the place of purchase.
- Do not use aluminum. It has about 1/3 more resistance than copper cable of the same size, and it is difficult to make good, low-resistance connections to aluminum wire.

Table 1 : Voltage Drop Per Foot of DC Cable

	Inverter Output (W)	500	1000	1500	2000
	Current (A)	50	100	150	300
Wire Size (AWG)	Resistance (ohms/ft) @ 25 °C	Voltage Drop per Foot			
4	0.000253	0.0127	0.0253	0.0380	0.0759
3	0.000201	0.0101	0.0201	0.0302	0.0603
2	0.000159	0.0080	0.0159	0.0239	0.0477
1	0.000126	0.0063	0.0126	0.0189	0.0378
0	0.000100	0.0050	0.0100	0.0150	0.0300
2/0	0.000079	0.0040	0.0079	0.0119	0.0237
3/0	0.000063	0.0032	0.0063	0.0095	0.0189
4/0	0.000050	0.0025	0.0050	0.0075	0.0150

NOTE: Xantrex recommends a size 0 cable with a maximum cable length of 6 feet (1.8 m).

For example:

NOTE: Voltage Drop per foot = Current value × Resistance value
 So for a 1000 W inverter output with a DC cable of size 0, multiply the maximum current of 100 A with 0.000100. The result is 0.0100 voltage drop per feet. If the cable is 6 feet long, the total voltage drop is $0.0100 \times 6 = 0.0600$.

So for a battery operating at 12.6 V at battery terminal the voltage at the inverter terminal drops to 12.54 V.

Fuse/Circuit Breaker Sizing Guidelines

Because batteries can produce thousands of amps, you are required to install DC-rated fuses (or circuit breakers) that can safely withstand the short-circuit current batteries can produce.

To select the correct fuse type and size:

1. Determine the total cold cranking amp rating for your battery(s).

NOTE: The cold cranking amp rating of each battery is displayed on the battery case. If it is not, contact the battery manufacturer to find out.

For example:

- If you are using one battery to power your inverter and its rating is 500, the total cold cranking amp rating is 500.
 - If you are powering your inverter with two batteries in parallel, and each has a rating of 500, the total cold cranking amp rating is 1000.
2. Once you have determined the total cold cranking amp rating of your batteries, identify the corresponding Ampere Interrupting Capacity (AIC) of the fuse or breaker required for your system by referring to Table 2.

NOTE: The AIC is the amount of battery short-circuit amperage that the fuse can safely withstand.

- If the Total Cold Cranking Amps indicate that the AIC is 2,700 amps or less, choose an ANL 150 fuse.
- If the Total Cold Cranking Amps indicate that the AIC is up to 200,000 amps or if you require a “code fuse”, choose a Class T 150 A fuse.

Table 2 Cold Cranking Amps / AIC

Total Cold Cranking Amps	Ampere Interrupting Capacity (AIC)
650 or less	1500
651–1100	3000
over 1100	5000

Installation

Cabling Procedure

Consult the following configurations and determine a match specific to your installation and follow the installation procedure “To connect the battery cables:” that comes next.

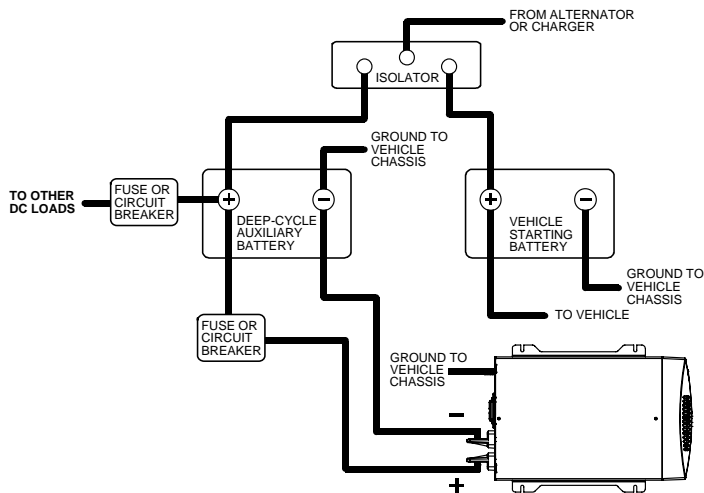


Figure 6 Configuration for Normal Loads

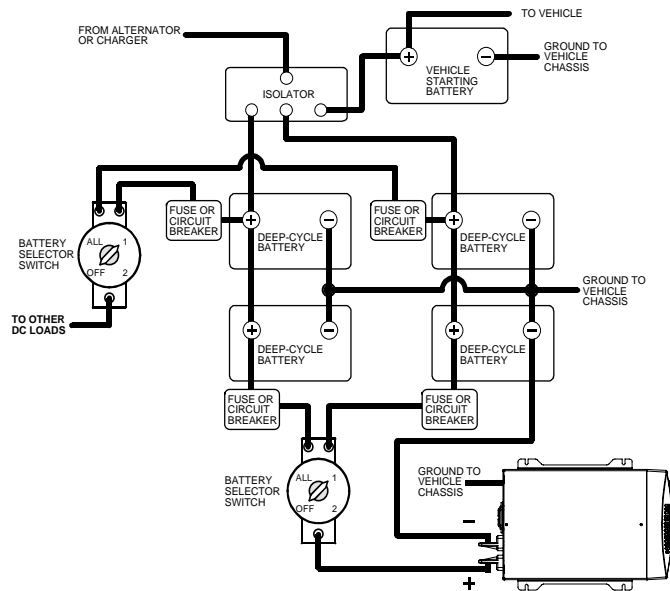


Figure 7 Configuration for Heavy Loads

To connect the battery cables:

1. Make sure the inverter is off and assemble the terminated cables (cables with connectors) that you bought.
2. Line up the connectors that will join the cables to the battery, battery selector switch, and fuse (or circuit breaker).

Reading the Front Panel Indicators

Indicator LEDs

- If the Green LED is On, it indicates that the unit is On and the AC outlet has power.
- If the Red LED is On, it indicates that the AC outlet has no power due to an error condition and an error code is displayed on the digital display underneath the LED.
- If the Red LED is blinking, it indicates that the unit is still On but with a warning condition and an error code is displayed on the digital display.

Digital Display

- Under normal operating conditions, the digital display shows the input voltage (in volts) and the output power (in kilowatts).
- Under an error condition, the digital display shows an error code and the Red LED turns on.
- Under a warning condition, the digital display shows an error code and the Red LED blinks.

Description of LED and Digital Display Codes

LED	Digital Display	Description
Green	13.5	Example: 13.5 volts
Green	1.43 0.25	Example: 1.43 Kw (1,430 watts) Example: 0.25 Kw (250 watts)
Green	AL1	Alarm is set to Enabled
Green	AL0	Alarm is set to Disabled
Red	E01	Under voltage shutdown
Red	E02	Over voltage shutdown
Red	E03	Over load shutdown
Red	E04	Over temperature shutdown
Blinking Red	E05	Under voltage alarm warning
Blinking Red	E06	AC Out over load warning
Blinking Red	E07	Over temperature warning

Troubleshooting



WARNING: Electrical shock and burn hazard.

Do not dismantle the PROwatt SW. It does not contain any user-serviceable parts. Attempting to service the unit yourself could result in an electrical shock or burn.

Troubleshooting Reference

Problem	Possible Cause	Solution
E 0 1	Under Voltage (low input) shutdown	Recharge the battery. Check cables and connection if secure.
E 0 1 with persistent low battery alarm.	Poor DC wiring and/or poor battery condition.	Use proper cable and make secure connections. Charge the battery or install a new battery.
E 0 2	Over Voltage (high input) shutdown	Make sure the inverter is connected to a 12 V battery.

Problem	Possible Cause	Solution
E 0 3	Overload shutdown	Reduce the load within the inverter's continuous power rating.
E 0 4 Heavy load is connected then AC output becomes unavailable.	Over temperature shutdown	Allow the inverter to cool off and reduce the load if continuous operation is required.
E 0 4 Normal load is connected then AC output becomes unavailable.	Over temperature shutdown	Improve ventilation and make sure the inverter's ventilation openings are not obstructed. Reduce the ambient temperature, if possible.



Problem	Possible Cause	Solution
E 05	Under Voltage alarm	Check battery status and recharge if necessary. Check for proper DC cable sizing. Check for loose connections and tighten if necessary.
E 06	AC Out overload warning	Reduce the loads connected to the AC outlet of the unit.
E 07	Over temperature warning	Reduce the loads connected to the AC outlet of the unit. Check that the ventilation holes are not blocked. Check for ambient temperature and move the unit to a cooler location whenever possible.

Problem	Possible Cause	Solution
No output voltage; no voltage indication.	The unit is off. No power to the inverter. Inverter fuse open. Reverse DC polarity.	Turn the inverter on. Check wiring to the inverter. Have a qualified service technician check and replace the fuse if necessary. Have a qualified service technician check and replace the fuse, making sure to observe correct polarity.

Specifications

NOTE: Specifications are subject to change without prior notice.

Physical and Environmental Specifications

Length × Width × Height	
• PROwatt SW 700i	12.2 × 7.3 × 3.5 in. (31 × 18.5 × 9 cm)
• PROwatt SW 1400i	14.5 × 9.5 × 4.5 in. (36.9 × 24 × 11.5 cm)
• PROwatt SW 2000i	16.5 × 9.5 × 4.5 in. (41.8 × 24 × 11.5 cm)
Weight	
• PROwatt SW 700i	5.9 lb (2.7 kg)
• PROwatt SW 1400i	10.2 lb (4.64 kg)
• PROwatt SW 2000i	12.05 lb (5.46 kg)
Operating temperature	32–104 °F (0–40 °C)

DC Input	700i	1400i	2000i
Input power (max. at full load)	840 W	1700 W	2400 W
Input current (max. at full load)	75 A	155 A	220 A
Input voltage range	10.5–15.5 Vdc		
Low battery alarm	Audible, 11 V		
Low battery cutout	10.5 V		
Startup or low battery recovery	12.0 V		

AC Output	700i	1400i	2000i
Continuous power	700 W	1400 W	2000 W
Surge power	1400 W	2800 W	4000 W
Output voltage (nominal)	230 Vac RMS ±10%		
Output voltage range	230 Vac ±10%		
Output waveform	True sine wave		
Output frequency	50 Hz ±0.5Hz		
Efficiency	Approximately 85–90%		
No load current draw	< 1000 mA		

Regulatory Approvals

CE Marking to the following Directives:

Low Voltage Directive 2006/95/EC	EN 50178:1997
EMC Directive 2004/108/EC	EN 61000-6-1:2007 EN 61000-6-3:2007

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