

# XPower Powerpack 1500 Sump Pump Backup

## Application Note

Xpower 1500

976-0055-01-01 Rev A

## Introduction

This Application Note describes how an XPower Powerpack 1500 may be used as a sump pump backup system.

## Problem

Homes located in regions with seasonal rainfall often include a 120 Vac Sump Pump to purge basement sumps in order to prevent a flood condition in the lower part of the home. Regions with significant rainfall often coincide with high winds causing utility power outages. During a power outage a sump pump stops purging water. The result is a flooded basement.

## Solution

Cost effective and easy to install, the XPower Powerpack 1500 provides sufficient 120 Vac peak power to start and operate most  $\frac{1}{4}$  Hp to  $\frac{1}{2}$  Hp sump pumps. The XPower 1500 also has sufficient battery capacity to provide up to 20 to 30 hours of backup under typical conditions or to remove over 800 gallons of water if it is operated continuously such as during a water main rupture.

## Backup Run Time

As in all battery-based backup systems; the larger the pump, the more power it draws from the XPower's internal battery, and the fewer hours the system will provide backup power during an outage. A sump pump's operational time is referred to as its duty cycle. The duty cycle, expressed as a percent value, is calculated by dividing the number of minutes it runs in an hour by 60 minutes ( $\text{minutes}/60(\times 100)$ ). The duty cycle is a measure of how hard the pump is working relative to its maximum pumping capacity. Sump pumps normally operate only a few minutes per hour. If the pump operated continuously, it would be operating at a 100% duty cycle. More commonly, these pumps operate in a 1% to 5% duty cycle with sufficient excess capacity for extreme rain conditions.

With a large  $\frac{1}{2}$  Hp sump pump (rated at 2900 G/hr) operated under typical low duty cycle conditions, the XPower 1500 is capable of providing up to 24 hours of backup power, or it can provide power to pump out 800 to 1200 gallons during an outage before running out of power.

Table 1 shows hours of backup power available using an XPower 1500 and a typical  $\frac{1}{4}$  Hp sump pump (rated at 1128G/hr) with 8 ft discharge head over the range of duty cycles:

**Table 1: Hours of backup time with the Xpower 1500**

Typical Scenario	Duty Cycle	Duty Cycle Description	Protection Time (hours)	Total Gallons Pumped
Light seepage	3.3%	20 seconds pumping, 9.5 minutes rest	34	1325
Light Rain Conditions	3.9%	18 seconds pumping, 7.3 minutes rest	26	1200
Moderate Rain Conditions	7.7%	17 seconds pumping, 3.4 minutes rest	12.5	1100
Very Heavy Rain Conditions	10.0%	17 seconds pumping, 2.3 minutes rest	8.5	1000
Water main leak	19.0%	16 seconds pumping, 1.1 minutes rest	4.5	970
Water main break (full flow)	100.0%	Continuous pumping - no rest cycle	45 minutes	940

If a sump system demands more than the capacity of the XPower 1500, an additional battery and a higher capacity battery charger may be added to enhance the systems run time capacity. Alternatively, the home owner may choose to step up to a larger residential Backup Power System which backs up not only the sump pump but also lights, refrigerator, furnace, microwave, phone, TV, stereo and other appliances all on silent, inverted battery power.

## Connecting the XPower

Connection of the XPower as a backup system requires no special tools or hard wiring. Follow the procedure below.

### To connect the Xpower as a backup system:

1. Connect the XPower 1500's 5 amp charger to the dedicated AC wall receptacle for the pump, and to the DC port on the Xpower 1500.
2. Turn the Xpower Charger On.

The charger light should glow amber initially. When the charger light turns green the battery should be fully charged. It may take minutes to several hours for the battery to charge fully. Continue to Step 3 only when the battery is fully charged.

3. Disconnect the sump pump from the AC receptacle and reconnect the 3-prong AC cord directly to the XPower's AC receptacle. Turn the XPower 1500 to On.

During a power outage the pump will continue to operate as usual on inverted battery power, but the battery charger stops charging.

During a prolonged power outage, an audible alarm on the XPower 1500 signals that the battery is almost depleted and near shut down. Upon return of utility power the charger will automatically begin to recharge the battery. Recharging can take 15 to 36 hours depending on pump duty cycle at the time. If the duty cycle remains

above 10% indefinitely the Xpower 5 amp charger may not be able to keep up and a larger or supplementary charger, such as a TC10TB Smart Charger or larger must be added.

All building electrical systems should be installed to comply with applicable electrical codes.

Xantrex is a registered trademark of Xantrex International.  
© 2003 Xantrex International. All rights reserved.

Technical Bulletin: *XPower Powerpack 1500 Sump Pump Backup* © August 2003 Xantrex International

UNLESS SPECIFICALLY AGREED TO IN WRITING, XANTREX TECHNOLOGY INC. ("XANTREX"):

(a) MAKES NO WARRANTY AS TO THE ACCURACY, SUFFICIENCY OR SUITABILITY OF ANY TECHNICAL OR OTHER INFORMATION PROVIDED IN ITS MANUALS OR OTHER DOCUMENTATION.

(b) ASSUMES NO RESPONSIBILITY OR LIABILITY FOR LOSS OR DAMAGE, WHETHER DIRECT, INDIRECT, CONSEQUENTIAL OR INCIDENTAL, WHICH MIGHT ARISE OUT OF THE USE OF SUCH INFORMATION. THE USE OF ANY SUCH INFORMATION WILL BE ENTIRELY AT THE USER'S RISK.

Part number: **976-0055-01-01 Rev A**

Contact information:

**Phone:** 1-800-670-0707 (toll-free in North America)  
**Phone:** 1-604-422-2777 (outside North America)  
**Fax:** 1-800-994-7828 (toll-free in North America)  
**Fax:** 1-604-420-1591 (outside North America)  
**Email:** [CustomerService@xantrex.com](mailto:CustomerService@xantrex.com)  
**Web:** [www.xantrex.com](http://www.xantrex.com)