



Power. On Your Terms.



PowerBank

OPERATION GUIDE & MANUAL

Optimized Energy Storage & Management for Residential & Commercial Applications Utilizing Efficient, Safe, Non-Toxic, Energy Dense Lithium Ferrous Phosphate (LFP) Chemistry.

SimpliPhi Your Power Security and Independence

and gain control of your own power.

SimpliPhi helps you manage your power as a personal resource. Anytime. Anywhere. SimpliPhi energy storage optimizes integration of renewable power with the grid and protects your home and mission-critical business functions from power outages and intermittency. SimpliPhi storage technology eliminates operating temperature constraints, toxic coolants and the risk of thermal runaway and fire.

SimpliPhi's battery technology utilizes the industry's most environmentally benign chemistry combined with proprietary architecture and power electronics (BMS) that eliminate the need for cooling or ventilation to create products that provide energy security and resiliency.

SimpliPhi Power offers proprietary, commercially available energy storage and management systems that are safe, non-toxic, reliable, durable, efficient, highly scalable, and economical over the lifetime of the PowerBank.

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Disclaimer of Liability


The use of this manual and the conditions or methods of installation, operation, use, and maintenance of the PHI PowerBank are beyond the control of SimpliPhi Power, Inc. The PHI PowerBank is an electrical power device. As with all electrical power devices, care and caution must be taken. All users assume full responsibility and must take all advisable precautions against, shock, fire, or injuries inherent with DC and AC electrical systems. SimpliPhi Power, Inc. assumes no responsibility and expressly disclaims any liability for loss, damage, or expense whether direct, indirect, consequential, or incidental that may arise out of or be in any way connected with such installation, operation, use or maintenance. Due to continuous improvements and product updates, the images shown in this manual may not exactly match the unit purchased.

Important Safety Instructions

This manual contains important safety instructions that must be followed during the installation and operation of this product. Read all instructions and safety information contained in this manual before installing or using this product.

- All electrical work must be performed in accordance with local, state, and federal electrical codes.
- This product is designed for indoor/compartment installation. DO NOT expose to rain, snow, moisture, or liquids of any type.
- Use insulated tools to reduce the chance of electrical shock or accidental short circuits.
- Remove all jewelry such as rings, watches, bracelets, etc., when installing or performing maintenance on the battery modules or inverter.
- Always disconnect the batteries or energy source prior to installing or performing maintenance on the inverter. Live power may be present at more than one point since an inverter utilizes both batteries and AC. Turning off the inverter may not reduce this risk.
-  As long as AC power is connected, it will pass through the inverter regardless of the ON/OFF power switch setting.
- Always verify proper wiring prior to starting the inverter.
- Do not operate the inverter if it has been damaged.
- Do not dismantle the inverter; there are no user-serviceable parts contained in this product. Attempting to service the unit yourself could cause electrical shock. Internal capacitors remain charged after all power is disconnected.

- Wear eye protection (safety glasses) when working with batteries.
- Remove all jewelry such as rings, watches, bracelets, etc., when installing or performing maintenance on the battery modules or inverter.
- Never work alone. Always have someone near you when working around batteries.
- Use proper lifting techniques when working with batteries.
- Never use old or untested batteries. Check each battery's label for age, type, and date code to ensure all batteries are identical.
- Batteries are sensitive to changes in temperature. Always install batteries in a stable environment.
- Install batteries in a well-ventilated area. Though **this does not apply to PHI Battery Modules**, many other batteries can produce explosive gasses. For compartment or enclosure installations, always vent batteries to the outside.
 - **PHI Battery Modules do not produce and gasses or vapors. No ventilation is required.**
- Provide at least one inch of air space between batteries to provide optimum cooling.
- Never smoke when in the vicinity of batteries. **(Does not apply to PHI Modules)**
- To prevent a spark at the battery and reduce the likelihood of an unwanted event, always connect the cables to the batteries first with the breaker in the "off" position. Then connect the cables to the inverter.
- Use insulated tools at all times.
- Always verify proper polarity and voltage before connecting the batteries to the inverter.
- To reduce the chance of fire or explosion, do not short-circuit the batteries.

 ***Caution: Verify polarity at all connections before energizing system. Reverse polarity at the battery terminals will void the Warranty and destroy the batteries.***

SAVE ALL MANUALS AND INSTRUCTIONS
KEEP ALL MANUALS AND INSTRUCTIONS WITH THE POWERBANK
SYSTEM FOR EASY REFERENCE

Introduction

PowerBank Explained

The PowerBank is a Portable Battery Powered Generator of Electrical Power wherever, whenever you need it.

- The PowerBank functions as an Uninterrupted Power Supply (UPS) and as a standalone AC Power Supply
- The PowerBank utilizes state of the art Lithium Ferrous Phosphate battery energy storage technology. The technology is safe, environmentally responsible, and designed to offer years of service.
- The PHI Battery Modules power a Magnum Inverter Charger that delivers 1600W of 120V 60HZ modified sine AC power.
- The PowerBank features standard AC outlets with GFCI protection. These outlets also feature 2 USB 2 Amp outlets to charge your portable devices.
- The PHI Battery Modules are charged by standard 120V 60Hz Grid Power via the Magnum Charger. Simply connect an extension cord from a wall outlet and to the AC inlet on the side of the PowerBank.
- The PHI Battery Modules can also be charged by using a 24V PV array, via the included Neutrik Speakon panel mount connector and the supplied PV Cable adaptor if your unit is so equipped.
- All of the components of the PowerBank are protected by circuit breakers and disconnects.
- The PowerBank is a US designed and assembled product.

PowerBank Standard Features

- 120V 60HZ Modified Sine AC with 1600W Power Rating
- 2600Wh to 5200Wh Backup Energy Storage depending on model
- 3 AC Outlets featuring GFCI Protection
- 1 AC Inlet for Grid pass through and battery charging
- Two USB Outlets - 2 Amp 5 Volts
- Wired remote-control User Interface
- PV/Solar Panel DC Power Inlet via Neutrik Speakon Connector with PV Cable adaptor if so equipped accessory item
- Locking Cabinet Doors
- One Storage Drawer
- Bamboo Work surface
- High Strength Castors

PowerBank Models and Power Capacity

PowerBank 2600

The PowerBank 2600 offers 2600Wh of DC Storage utilizing one PHI 2.6/24V Lithium Ferrous Phosphate Battery Module.

PowerBank 5200

The PowerBank 5200 offers 5200Wh of DC Storage utilizing two PHI 2.6/24V Lithium Ferrous Phosphate Battery Modules.

Appliances that the PowerBank can Operate

The PowerBank offers modified sine AC power. The Maximum AC power is limited to 1600 Watts. AC output current is limited to 15Amps. This is sufficient to operate computers, appliances, AV equipment, power tools, fans and even electric blankets. The PowerBank also features redundant protection devices in case the load it is designed to support is exceeded.

Generalized Energy Consumption for Common Appliances

The PHI PowerBank is a Portable Battery Powered Generator of Electrical Power wherever, whenever you need it.

The power required to run equipment in everyday situations varies with the electrical device. Appliances such as microwaves, irons, toaster ovens, and hairdryers require high current; they are using this power at relatively low volumes over time. Appliances such as televisions, computers, fans, and refrigerators use lower current for extended periods, using generally higher volumes over time.

Typical Examples of consumption (varies with appliance and usage)

<u>High current devices:</u>	<u>Watts</u>	<u>Time (Minutes)</u>	<u>Usage (WH)</u>
Toaster Oven*	1100	30	150
Microwave	1200	15	300
Electric Kettle*	1200	7	130
Hotplate*	1160	15	290
<u>Low Current devices:</u>	<u>Watts</u>	<u>Time (Hours)</u>	<u>Usage (WH)</u>
Computer	50	3	150
Television	65	2	130
Radio	10	3	30
Lamp	40	5	200
Fan	35	3	105

**Thermostat regulated*

Pre-Installation

Unpacking and Inspection

Visually inspect the packaging and packing materials for any signs of damage or breach. Confirm the contents of the package are accounted for and in good shape. The PowerBank will include the following items:

PowerBank 2600

- This PowerBank Manual
- One PHI 24V 2600Wh Battery Storage Module
- Magnum MM1524 AE 24V Inverter Charger
- Magnum wired remote Control Interface
- Assembled Steel Cabinet
- Bamboo Work Surface

PowerBank 5200

- This PowerBank Manual
- Two PHI 24V 2600Wh Battery Storage Modules
- Magnum MM1524 AE 24V Inverter Charger
- Magnum wired remote Control Interface
- Assembled Steel Cabinet
- Bamboo Work Surface

Installation Locations for the PowerBank

The PowerBank is designed to be moisture resistant. That said; keep the system away from excessive moisture, mist, rain or wetness.

As with all electrical devices, keep isolated from flammable materials or vapors.

The PowerBank is designed to be used anywhere you would generally plug a device into a wall outlet or extension cord. The PowerBank is a welcome addition to any commercial or residential facility. The PowerBank is perfect for use as an office or kitchen UPS. The PowerBank provides useful power for contractors on remote job sites or for any off grid work site.

PowerBank Operation Guideline

Stand Alone/Off Grid Mode

The PowerBank will provide 1600 watts of AC power as long as the batteries have sufficient charge. The PowerBank features a PV Inlet connector for remote Solar charging. Connect the PowerBank to a properly sized 24V PV array using the Neutrik Speakon panel mount connector and supplied PV adaptor cable if so equipped with PV adaptor accessory item.

For Remote AC Power:

1. Locate the PowerBank where you need AC Power.
2. Switch the circuit breaker(s) on the PHI 2.6/24V module(s) to the on position. If using the PowerBank with two 2.6/24V modules make sure that both circuit breakers are in the on position.
3. Turn the PowerBank inverter "ON" using the Magnum Controller Module.
4. Plug electronic devices & equipment into one of the PowerBank AC or USB DC power outlets.
5. Power is now available to run your AC or DC electrical devices and equipment.

Uninterrupted Power Supply UPS Mode

UPS (Uninterrupted Power Supply) Mode:

1. Plug a standard extension cord into the PowerBank "Charge Input" and into a standard 115VAC AC wall outlet.
2. Plug electrical devices & equipment into one of the PowerBank AC or USB DC power outlets.
3. Turn the PowerBank inverter "ON" using the Controller Module.
4. Press Charge Button to "ON"
5. Press Inverter button to "ON"
6. AC Power will now be available from the PowerBank AC Outlet.
 - This AC power will come from the grid.
 - The AC Grid automatically charges the PowerBank whenever the batteries need to be re-charged.

Should the Grid fail, the PowerBank will provide UPS functions that power your equipment.

PowerBank GFCI and Circuit Breakers Explained

The PowerBank features GFCI Protected AC outlets. Ground-Fault Circuit Interrupter or GFCI severely limits the risk of electric shock from the AC output. GFCIs are standard in all modern wiring installations. If the GFCI circuit is tripped, simply use the push reset to enable AC operation. The circuit will then be able to function, providing that the fault has been corrected.

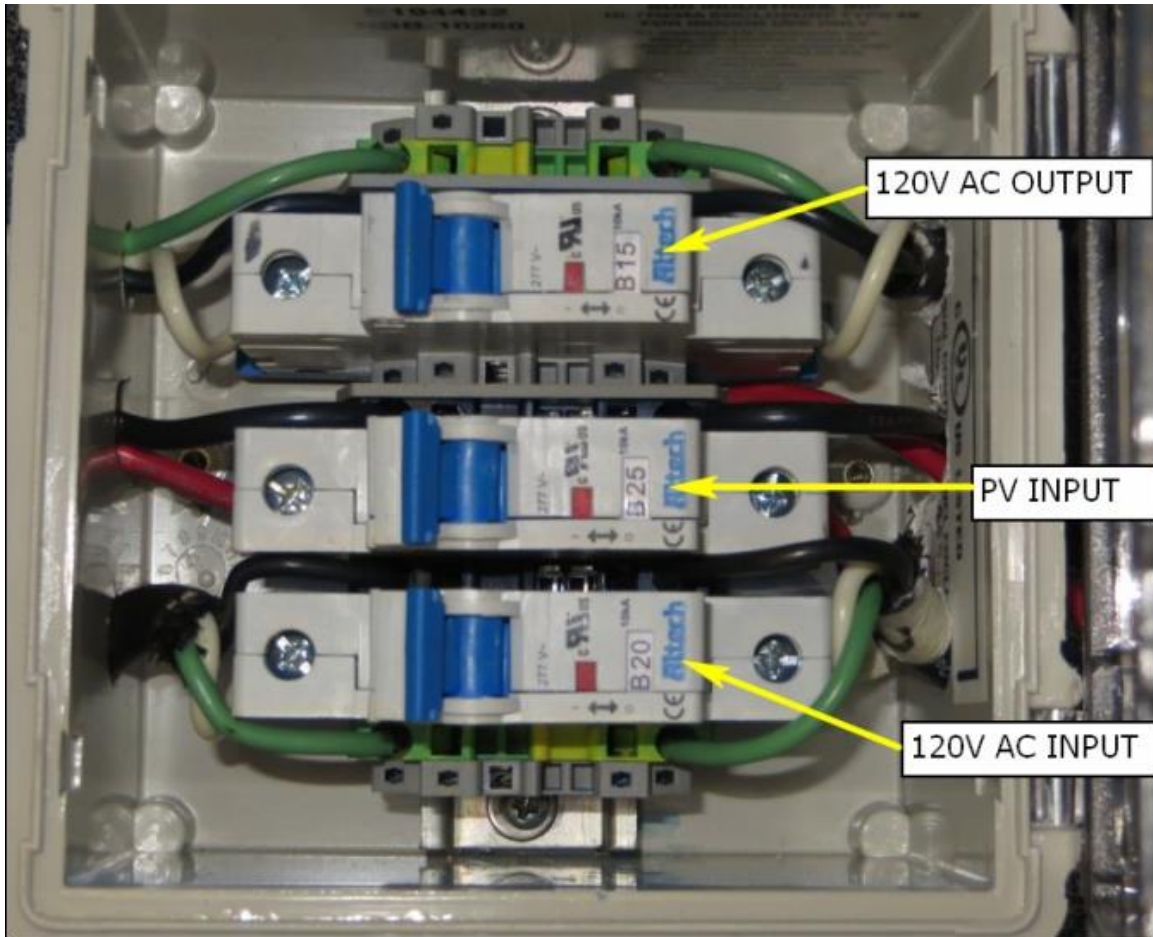
Breakers and Protection Circuitry Explained

There are 4 circuit breakers integrated into the PowerBank 2600 and 5 circuit breakers integrated into the 5200.

The Battery Disconnect(s) – 80 Amp Breaker

This protects from battery over current and provides a simple disconnect if the unit needs to be serviced or stored for a long period of time. They are located on the front panel of the PHI 2.6/24V module(s).

The remaining three breakers are housed inside the breaker box. These breakers serve as protection for AC output, PV or Solar Power Input, and AC Input for battery charging or AC Pass through in a UPS mode. These breakers protect from over current, incorrect wiring polarity, or short circuit. The circuit breakers will protect against excessive load current and offer protection from short circuit scenarios. The circuit breakers also serve as a disconnect for trouble shooting, maintenance, etc.



- Red = “Closed” or “On”
- Green = “Open” or “Tripped”

Initial Inverter Start Up

Switch the 80A circuit breaker on the PHI 2.6/24V module(s) to the ON position. The wired remote will begin to flash. After 5-10 seconds the inverter will be ready for service. Press the inverter ON/OFF switch. Connect your appliances or devices to the AC Outlets and use them as you normally would.

Power Down Procedure

When the work is done and it's time to cease operations, turn the Inverter off at the remote control panel. Disconnect all equipment or loads.

- In a UPS Application, leave the AC Grid connection in place to charge the batteries as needed.
- In remote power applications, turn the battery module(s) circuit breakers to OFF.

Battery Disconnect

Use the 80Amp Breaker(s) on the PHI 2.6/24V modules as a Battery Disconnect to isolate the batteries from the inverter for maintenance or long periods of storage. If there is no grid back up power to

charge the batteries on occasion, the inverter can slowly drain the batteries down. To have power on demand, after several weeks, please utilize that battery disconnect. This is especially important in off grid and remote power applications.



ME-RC50 Wired Remote Settings

The wired remote control has flash memory that saves the factory settings. You should not need to make any adjustments. In some instances, altering the inverter settings could cause harm to the battery bank. If changes are made, it is advisable to return the PowerBank to the PHI factory settings.

Magnum Inverter Settings for PHI Modules

- Search Watts: Off
- Power-up Always: No
- Done Time: 1Hr.
- Max. Amps: 200A
- Chg. Volts: 28V
- Max. Time: 2Hr.
- Recharge: 24V
- Low battery cut-out: 20V

For more detail on how to complete setting, see Appendix B – Resources for Magnum Inverter Support and Documentation.

Maintenance and Troubleshooting

PowerBank Recommended Care and Maintenance

The PowerBank is designed to offer many years of reliable service in a variety of environments. The PowerBank is resistant to most environmental elements but should be isolated from excessive water or moisture, extreme heat, solvents, flammable materials, or environmental hazards.

If the PowerBank becomes dirty or grimy, simply wipe it down as you would any kitchen cabinet. Do not use a pressure washer or hose to clean the PowerBank.

PowerBank Troubleshooting Guide

Symptom	Possible Cause	Solution
AC Outlet has stopped providing power and a Low Battery CutOff message is visible on the Remote Control	The Battery has reached a low charge state and needs to be recharged.	Recharge PHI Battery modules using one of the following methods. - Connect the AC inlet to a qualified 120V AC source. Initiate Charge VIA the Remote Control. Allow the Battery Modules to charge. - Connect PV/Solar Panels to the PHI PowerBank. Allow the Battery Modules to charge.
AC Outlet does not provide AC Power	Inverter is not switched "ON".	Turn inverter on at Remote Control.
AC Outlet does not provide AC Power	AC Output Breaker Has tripped.	Disconnect load. Reset the main AC output Breaker. Loads Exceeding 15 Amps should not be connected to the PowerBank AC outlets.
AC Outlet does not provide AC Power	AC Breaker on the Magnum Inverter has tripped.	Reset the Magnum 15A AC Output breaker.
AC Outlet does not provide AC Power	GFCI Detector on the AC outlet has tripped.	Disconnect AC device. Reset the GFCI using the push button on the AC outlet. If the GFCI repeatedly trips, there is likely a fault with the equipment that is in use. Discontinue use of this equipment.
PowerBank will not power ON.	Battery Disconnect Breaker is "OFF" or has tripped.	Disconnect all devices. Turn the Battery Disconnect to the "ON" position. Initiate PowerBank Start UP Procedure.

Specifications

Appendix A – PHI Battery Module Complete Specifications

The Power Specifications for each individual PHI2 24V 2.6 kWh Battery Module are displayed in the table below.

PHI Module Specifications	PHI 2.6 kWh - 24V
Amp Hours (C/2):	102.4
Nominal Voltage:	25.6
Max Charge Voltage:	28.8V
Low Discharge Voltage:	20V
Max Output Capacity:	60A
Max Charge Current:	45A
Capacity	2.6 kWh

Appendix B – Resources for Magnum Inverter Support and Documentation

- Hard Copies of the Magnum MM1524AE Inverter Charger Manual have been included with your PHI PowerBank and should be stored in the drawer.
- Hard Copies of the Magnum ME-RC Basic (wired) Remote Control Manual have been included with your PHI PowerBank and should be stored in the drawer.
- As of 11/27/2017, Digital Copies of these manuals can be found here:

<http://www.magnum-dimensions.com/sites/default/files/MagDocs/64-0035-Rev-A-MM-AE-Series.pdf>

<http://www.magnum-dimensions.com/sites/default/files/MagArchive/64-0003-Rev-D-ME-RC.pdf>

Contacting SimpliPhi

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