

# ***BPS-120***

*Stand-Alone Backup Power System*

## ***User's Guide***

**Version 1.0**

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# 2. Interference Statements and Warnings

## **FCC Interference Statement**

This switch complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This switch may not cause harmful interference.
- (2) This switch must accept any interference received, including interference that may cause undesired operations.

## **FCC Warning**

This equipment has been tested and found to comply with the limits for a Class A digital switch, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to

radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**CE Mark Warning:**

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

**Taiwanese BSMI (Bureau of Standards, Metrology and Inspection) A Warning:**

警告使用者  
這是甲類的資訊產品，在居住的環境使用時，  
可能造成射頻干擾，在這種情況下，  
使用者會被要求採取某些適當的對策。

**Certifications**

Refer to the product page at [www.zyxel.com](http://www.zyxel.com).

## 3. Information for Canadian Users

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operation, and safety requirements. The Industry Canada does not guarantee that the equipment will operate to a user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly. The customer should be aware that the compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

For their own protection, users should ensure that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

**Caution**

Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

**Note**

This digital apparatus does not exceed the class A limits for radio noise emissions from digital apparatus set out in the radio interference regulations of Industry Canada.

## 4. ZyXEL Limited Warranty

ZyXEL warrants to the original end user (purchaser) that this product is free from any defects in materials or workmanship for a period of up to two years from the date of purchase. During the warranty period, and upon proof of purchase, should the product have indications of failure due to faulty workmanship and/or materials, ZyXEL will, at its discretion, repair or replace the defective products or components without charge for either parts or labor, and to whatever extent it shall deem necessary to restore the product or components to proper operating condition. Any replacement will consist of a new or re-manufactured functionally equivalent product of equal value, and will be solely at the discretion of ZyXEL. This warranty shall not apply if the product is modified, misused, tampered with, damaged by an act of God, or subjected to abnormal working conditions.

**NOTE**

Repair or replacement, as provided under this warranty, is the exclusive remedy of the purchaser. This warranty is in lieu of all other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular use or purpose. ZyXEL shall in no event be held liable for indirect or consequential damages of any kind of character to the purchaser.

To obtain the services of this warranty, contact ZyXEL's Service Center for your Return Material Authorization number (RMA). Products must be returned Postage Prepaid. It is recommended that the unit be insured when shipped. Any returned products without proof of purchase or those with an out-dated warranty will be repaired or replaced (at the discretion of ZyXEL) and the customer will be billed for parts and labor. All repaired or replaced products will be shipped by ZyXEL to the corresponding return address, Postage Paid. This warranty gives you specific legal rights, and you may also have other rights that vary from country to country.



**Online Registration**

Register online registration at [www.zyxel.com](http://www.zyxel.com) for free future product updates and information.

## 5. Customer Support

When you contact your customer support representative please have the following information ready:

Please have the following information ready when you contact customer support.

- Product model and serial number.
- Warranty Information.
- Date that you received your device.
- Brief description of the problem and the steps you took to solve it.

METHOD LOCATION	SUPPORT E-MAIL SALES E-MAIL	TELEPHONE <sup>1</sup> FAX <sup>1</sup>	WEB SITE FTP SITE	REGULAR MAIL
WORLDWIDE	<a href="mailto:support@zyxel.com.tw">support@zyxel.com.tw</a>  <a href="mailto:sales@zyxel.com.tw">sales@zyxel.com.tw</a>	+886-3-578-3942  +886-3-578-2439	<a href="http://www.zyxel.com">www.zyxel.com</a> <a href="http://www.europe.zyxel.com">www.europe.zyxel.com</a> <a href="ftp://ftp.zyxel.com">ftp.zyxel.com</a> <a href="ftp://ftp.europe.zyxel.com">ftp.europe.zyxel.com</a>	ZyXEL Communications Corp. 6 Innovation Road II Science Park Hsinchu 300 Taiwan
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<sup>1</sup> “+” is the (prefix) number you enter to make an international telephone call.

## BPS-120 User's Guide

METHOD LOCATION	SUPPORT E-MAIL	TELEPHONE <sup>1</sup>	WEB SITE	REGULAR MAIL
	SALES E-MAIL	FAX <sup>1</sup>	FTP SITE	
DENMARK	<a href="mailto:support@zyxel.dk">support@zyxel.dk</a> <a href="mailto:sales@zyxel.dk">sales@zyxel.dk</a>	+45 39 55 07 00 +45 39 55 07 07	<a href="http://www.zyxel.dk">www.zyxel.dk</a>	ZyXEL Communications A/S Columbusvej 5 2860 Soeborg Denmark
NORWAY	<a href="mailto:support@zyxel.no">support@zyxel.no</a> <a href="mailto:sales@zyxel.no">sales@zyxel.no</a>	+47 22 80 61 80 +47 22 80 61 81	<a href="http://www.zyxel.no">www.zyxel.no</a>	ZyXEL Communications A/S Nils Hansens vei 13 0667 Oslo Norway
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# Table of Contents

<b>1 Introducing the BPS-120 .....</b>	<b>9</b>
<b>2 Hardware Installation and Connections .....</b>	<b>9</b>
2.1 Desktop Installation.....	10
2.2 Rack-mounted Installation .....	10
2.3 Attaching Power Cables and Connector Definition .....	12
2.4 Front Panel and LED Displays.....	14
<b>3 Troubleshooting .....</b>	<b>18</b>





# 1 Introducing the BPS-120

The BPS-120 is a backup power system to which you can connect up to six of ZyXEL's devices that have a 12VDC external backup power supply connector. The BPS-120 monitors the power status of the connected devices and immediately provides backup power to a device that loses power or has a hardware power failure. The BPS-120 can supply power to one device at a time.



**Figure 1 BPS-120 Backup Power System**

The BPS-120 has the following features:

- Six (6) output power ports for connecting devices.
- Individual front-panel LEDs to show status for each output power port, internal power hardware, internal fans, and internal temperature.
- Fast power switchover ensures that a power failure on a connected device does not cause it to restart.
- Reduced form factor facilitates rack mounting and high-density deployment.

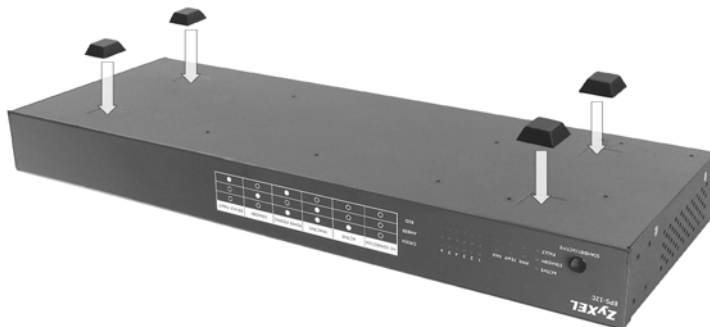
## 2 Hardware Installation and Connections

**Do not block the device's rear panel or the side panel ventilation holes. Leave space between devices when stacking.**

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## 2.1 Desktop Installation

1. Set the BPS-120 upside-down on a sturdy level space with a 100/240 VAC power outlet nearby.
2. Make sure there is enough clearance near the BPS-120 to allow air circulation, the attachment of cables, and the power line cord.
3. Remove the adhesive backing from the supplied rubber feet.
4. Attach the rubber feet to each corner on the bottom of the BPS-120. These rubber feet help protect the BPS-120 from shock and/or vibration, and ensure space between devices when stacking.
5. Turn the BPS-120 right-side up after you have attached the rubber feet.



**Figure 2: Attaching the Rubber Feet**

## 2.2 Rack-mounted Installation

The BPS-120 can be mounted on an EIA standard size, 19-inch rack or in a wiring closet with other equipment. Follow the steps below to mount your BPS-120 on a standard EIA rack using the included rack-mounting hardware.

1. Align one bracket with the holes on one side of the BPS-120 and secure it with the bracket screws. Similarly, attach the other bracket to the opposite side of the BPS-120.



**Figure 2 Attaching the Rack Mounting Brackets**

- 2. After attaching both mounting brackets, position the BPS-120 in the rack by lining up the holes in the brackets with the appropriate holes on the rack. Secure the BPS-120 to the rack with the rack's mounting screws.



**Figure 3 Rack Mounting the BPS-120**

## 2.3 Attaching Power Cables and Connector Definition

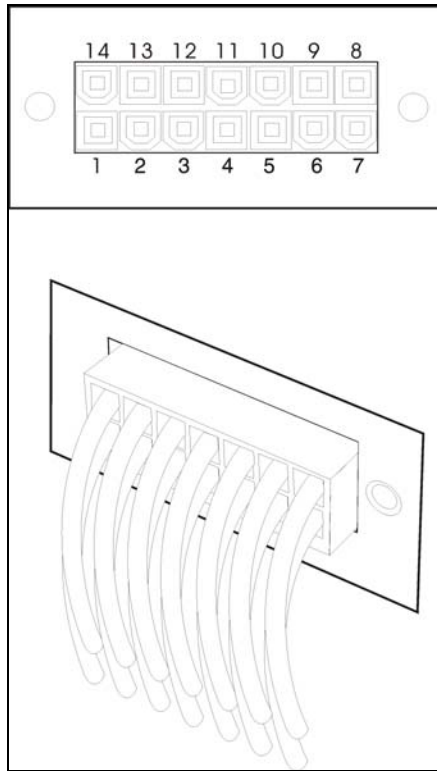
The BPS-120 includes power connection cables for up to six (6) external devices. The rear connector pin-out diagram and power signal descriptions are shown in the following *Figure 5*, and *Table 1* for OUTPUTs (1-6). Backup power is supplied by inserting power cables into any of the OUTPUTs (1-6) on the rear panel of the BPS-120 and into the corresponding power input connector of device(s) such as switches or routers. The power connector cables may be inserted only one way. There is no need to worry about inserting the power cables incorrectly as they are keyed for one position.

Backup power for externally connected devices is supplied based upon output port priority, with OUTPUT 1 having the highest priority. That is, an external device connected to OUTPUT 1 has backup power priority over devices connected to OUTPUTs 2-6. OUTPUT 2 has backup power priority over devices connected to OUTPUTs 3-6, etc.

To turn the BPS-120 on, connect the power line cord to a 100/240 VAC power outlet and move the rocker switch on the rear panel from the “0” to “1” position. The **STANDBY, PWR, TEMP, and FAN** LEDs will then light on the front panel. If they do not light up see *Table 5* for troubleshooting information.



**Figure 4 BS-120 Rear Panel Showing OUTPUT Port Power Connections**



**Figure 5 BPS-120 OUTPUT Port Connector Pin Diagram, and Cable**

**Table 1 BPS-120 OUTPUT Port Connector(s) (1-6) Pin Definition**

PIN NUMBER	DESIGNATION
1	GND
2	N/A
3	12V
4	12V
5	12V
6	12V
7	GND
8	GND
9	N/A
10	BPS present
11	BPS Status0
12	BPS Status1
13	Power good
14	GND

## 2.4 Front Panel and LED Displays

The BPS-120 defaults to **STANDBY** mode when the BPS-120 is switched on. Depress the front panel dual function **STANDBY/ACTIVE** switch to place the BPS-120 in active mode, capable of supplying power to remote devices.

System and remote power status information are shown on the front panel of the BPS-120 using two groups of LED displays: the first group shown in *Figure 6* monitors internal BPS-120 parameters and the system mode (standby/active), the second group of LEDs shown in *Figure 7* shows status information for each of the six power OUTPUT ports.

Enabling backup power to any of six external devices is as simple as connecting the (supplied) system power cables from each OUTPUT 1-6 on the back panel of the BPS-120 to external devices. Be sure the BPS-120 is in standby mode (the **STANDBY** LED)

should be lit) when connecting external devices, then toggle the **STANDBY/ACTIVE** mode switch (shown in *Figure 6*) to active mode to update OUTPUT 1-6 priority and sense new power readings at the output ports. The **ACTIVE** LED should light.

**You should toggle the front panel STANDBY/ACTIVE switch after turning the BPS-120 on, forcing it to sense and update its remote device power readings on OUTPUTs 1-6.**



**Figure 6 BPS-120 Front Panel STANDBY/ACTIVE**

In general the BPS-120 may be in one of the following states: **ACTIVE**, **STANDBY**, or **FAULT**, as indicated by their corresponding front panel LEDs shown in *Figure 6*. The BPS-120 also includes advanced self-diagnostic monitoring features to ensure that its own circuitry is functioning normally; the **PWR**, **TEMP**, and **FAN** LEDs indicate these states. This information is described in *Table 2*.

**Table 2 BPS-120 System States and Internal System Indicators**

BPS-120 STATE			PWR	TEMP	FAN
ACTIVE	On: The BPS-120 is in ACTIVE mode.		GREEN: The BPS-120 internal power module is functioning normally.	GREEN: The BPS-120 internal temperature is within normal limits.	GREEN: The BPS-120 internal fans are operating normally.
STANDBY	On: The BPS-120 is in STANDBY mode.		RED: The BPS-120 internal power module has failed.	RED: The BPS-120 has an internal over-temperature problem.	RED: The BPS-120 internal fan(s) are not operating properly.

**Table 2 BPS-120 System States and Internal System Indicators**

BPS-120 STATE			PWR	TEMP	FAN
FAULT	On: The BPS-120 has detected an internal system problem or external power fault.				

Each rear panel OUTPUT port has a corresponding (GREEN, RED, AMBER) LED to indicate its own state as shown in *Figure 7* and *Table 3* and *Table 4*.

Typically the system operator need only monitor the LED indicators on the BPS-120 front panel to ensure externally connected systems are operating normally.



**Figure 7 BPS-120 Front Panel DC Output LED Detail**

**Table 3 Front Panel DC Output Power Output LEDs**

	NO CONNECTION	ACTIVE	INACTIVE	POWER FEEDING	STANDBY	DEVICE FAULT
GREEN	Off	On	On	On	Off	Off
AMBER	Off	Off	On	Off	On	Off
RED	Off	Off	Off	On	Off	On



**Table 4 BPS-120 Front Panel DC Output LEDs State Definitions**

<b>PORT LED INDICATIONS</b>	<b>COLOR</b>	<b>DC OUTPUT LED STATUS</b>	<b>DESCRIPTION</b>
NO CONNECTION	Green	Off	No external device is connected to OUTPUT 1-6.
NO CONNECTION	Amber	Off	No external device is connected to OUTPUT 1-6.
NO CONNECTION	Red	Off	No external device is connected to OUTPUT 1-6.
ACTIVE	Green	On	External device is connected to OUTPUT1-6 but no backup power is supplied.
ACTIVE	Amber	Off	External device is connected to OUTPUT1-6 but no backup power is supplied.
ACTIVE	Red	Off	External device is connected to OUTPUT1-6 but no backup power is supplied.
INACTIVE	Green	On	Output port is unavailable to supply external power because another is in use.
INACTIVE	Amber	On	Output port is unavailable to supply external power because another is in use.
INACTIVE	Red	Off	Output port is unavailable to supply external power because another is in use.
POWER FEEDING	Green	On	The BPS-120 is providing power to the connected device.
POWER FEEDING	Amber	Off	The BPS-120 is providing power to the connected device.
POWER FEEDING	Red	On	The BPS-120 is providing power to the connected device.
STANDBY	Green	Off	The BPS-120 is in standby mode.
STANDBY	Amber	On	The BPS-120 is in standby mode.
STANDBY	Red	Off	The BPS-120 is in standby mode.
DEVICE FAULT	Green	Off	The BPS-120 has detected an external or internal fault. See <i>Table 5</i> .

**Table 4 BPS-120 Front Panel DC Output LEDs State Definitions**

PORT LED INDICATIONS	COLOR	DC OUTPUT LED STATUS	DESCRIPTION
DEVICE FAULT	Amber	Off	The BPS-120 has detected an external or internal fault. See <i>Table 5</i> .
DEVICE FAULT	Red	On	The BPS-120 has detected an external or internal fault. See <i>Table 5</i> .

## 3 Troubleshooting

Make sure that the BPS-120 is plugged into an appropriate AC power supply.

**Table 5 BPS-120 Troubleshooting Tips**

PROBLEM	CONDITION	CORRECTIVE ACTION
The STANDBY LED is off.	Faulty or not connected AC power supply.	Make sure you are using the correct power line cord and it is plugged into an appropriate 100/240 VAC power supply receptacle. Check the power line fuse.  Unplug the power line cord and plug it in again. Turn the BPS-120 on using the rear panel switch. If the error persists you should contact your vendor or Zyxel for servicing.
The STANDBY LED is on.	The BPS-120 is in standby mode.	Press the STANDBY/ACTIVE button to put the BPS-120 into active mode.
The FAULT LED is red.	The BPS-120 has an internal hardware system fault (PWR, TEMP, or FAN LEDs are red).	Monitor the PWR, TEMP, and FAN LEDs, then turn the BPS-120 off or disconnect external devices.

**Table 5 BPS-120 Troubleshooting Tips**

<b>PROBLEM</b>	<b>CONDITION</b>	<b>CORRECTIVE ACTION</b>
The PWR LED is red.	DC output power is unavailable or not operating properly.	The internal power supply is defective or the BPS-120 has detected an overcurrent. Press the STANDBY/ACTIVE button. If the FAULT LED does not turn off and the PWR LED does not turn green, cycle the power on the BPS-120 using the rear panel switch. If the problem persists replace the BPS-120.
The TEMP LED is red.	BPS-120 internal temperature has exceeded limit.	Reduce the ambient temperature.
The FAN LED is red.	Fan speed is wrong (too fast, too slow) or one of the four fans has stopped operating.	A fan is defective. Replace the BPS-120.

**Table 6 Technical Specifications for the BPS-120**

AC Input Voltage	100 - 240 VAC, 50/60 Hz
Power	Overload protection (power module fuse) 1.8A Max internal universal power supply 120 W per port 12 VDC output Power consumption 180W maximum (AC)
Operating Temperature	0° C ~ 45° C (32° F ~ 113° F)
Storage Temperature	-25° C ~ 70° C
Operational Humidity	10% ~ 90% (non-condensing)
Weight	4.0 kg
Dimensions (rack)	19" rack mountable width, 1U height

**Table 6 Technical Specifications for the BPS-120**

Safety	UL 60950-1 CSA 60950-1 EN60950-1 IEC-60950-1
EMC	FCC Part15 (Class A) CE EMC (Class A)