

User Manual

# Service Bypass PDU 16A for PowerValue 11 RT 1-3kVA

## Document information

**File name** : 4NWP101740R0001\_OPM\_ABB\_PDU\_16\_EN\_REV-C.docx  
**Model** : Service Bypass PDU 16A PowerValue 11 RT  
**Date of issue** : 01.09.2016  
**Article number** : 4NWP101740R0001  
**Document number** : 4NWD002985  
**Revision** : C

## Foreword

The PDU System for PowerValue 11 RT 1-3kVA operates with mains, battery or bypass power. It contains components that carry high currents and voltages. The properly installed PDU System is grounded to earth and IP 20 rated against electrical shock and foreign objects.

This user manual contains guidelines to check delivery, installing and commissioning of the PDU and is intended for people who plan the installation, install, commission and use or service the PDU. The reader is expected to know the fundamentals of electricity, wiring, electrical components and electrical schematic symbols

**CAREFULLY READ THE USER MANUAL BEFORE  
OPERATING OR WORKING ON THE PDU.**

# Contents

<b>1 Safety</b> .....	<b>4</b>
1.1 Safety symbols and warnings .....	4
1.2 Safety rules .....	5
<b>2 Description</b> .....	<b>7</b>
2.1 Introduction.....	7
2.2 System description.....	7
<b>3 Installation</b> .....	<b>8</b>
3.1 Receipt of the unit and visual inspection.....	8
3.2 Unpacking.....	8
3.3 PDU connections.....	8
3.4 Rack-mount installation .....	9
<b>4 Indicator lamps</b> .....	<b>10</b>
4.1 Mains indicator lamp .....	10
4.2 UPS indicator lamp.....	10
<b>5 Operation</b> .....	<b>11</b>
5.1 Transfer to maintenance bypass mode .....	11
5.2 Transfer to UPS mode .....	11
<b>6 Troubleshooting</b> .....	<b>12</b>
<b>7 Specifications</b> .....	<b>13</b>

# 1 Safety

## 1.1 Safety symbols and warnings

**PDU** POWER DISTRIBUTION UNIT



INDICATES AC INPUT



INDICATES AC OUTPUT

**MAINS** MAINS LAMP INDICATES LOCAL POWER IS AVAILABLE AND THE LOAD MAY BE TRANSFERRED TO BYPASS

**UPS** [A05]

**WARNING** SEVERE INJURY AND/OR SERIOUS DAMAGE TO THE SYSTEM MAY RESULT IF PROPER PRECAUTIONS ARE NOT TAKEN

**CAUTION** MINOR INJURY AND/OR DAMAGE TO THE PRODUCT CAN RESULT IF PROPER PRECAUTIONS ARE NOT TAKEN

**NOTE** REFER TO THE USER MANUAL TO AVOID PROPERTY DAMAGE





SAFETY WARNING: THIS SYMBOL IS USED TO WARN THE USER ABOUT WARNINGS, CAUTIONS AND NOTES



DANGER: THIS SYMBOL IS USED IN THE OCCURRENCE OF ELECTRICAL LIVE PARTS WITH HAZARDOUS VOLTAGE

## 1.2 Safety rules

 <p><b>DANGER!</b></p>  <p><b>WARNING!</b></p>	<p><b>OPENING OR REMOVING THE COVER MAY EXPOSE YOU TO DANGEROUS VOLTAGES, EVEN WHEN THE AC CORD IS DISCONNECTED FROM THE ELECTRICAL SOCKET.</b></p>
--	---

### **SAVE THESE INSTRUCTIONS**


This manual contains important instructions that should be followed during installation and operation of the PDU. This product is designed for commercial / industrial use with UPS systems. It is not intended for use with life support and other designated “critical” devices.

Do not exceed PDU or UPS rating labels.

Read all safety and operating instructions before operating the PDU and the connected UPS system. Adhere to all warnings on the unit and in this manual. Follow all operating and user instructions.



Turn the UPS off and unplug the PDU before cleaning. Use only a soft cloth, never liquid or aerosol cleaners.

The UPS and PDU are designed for data processing equipment. Do not plug laser printers or appliances, such as hair dryers, heaters, vacuum cleaners, or electrical drills, into the UPS output sockets.

 <p><b>NOTE!</b></p>	<p><b>DO NOT MODIFY THE CABLES IN ANY WAY. THE PDU SOCKETS SHOULD MATCH THE UPS SOCKETS. THE PDU MUST BE EARTHED AT ALL TIMES WHILE IN USE. TURN OFF THE UPS BEFORE UNPLUGGING IT.</b></p>
---	--

The UPS and the PDU are equipped with earthed plugs (plug types vary depending on model). Do not defeat the safety purpose of this plug. If unable to fully insert the plug into the designated socket, contact a qualified electrician or your local dealer or representative for assistance.

Route power supply cords so they are not walked on or pinched in any way.

 <p><b>DANGER!</b></p>  <p><b>WARNING!</b></p>	<p><b>RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER, NO USER SERVICEABLE PARTS INSIDE.</b></p>
--	--



**NOTE!**

FOR USE IN A CONTROLLED ENVIRONMENT. REFER TO MANUAL SPECIFICATIONS FOR ENVIRONMENTAL CONDITIONS.



**NOTE!**

WHEN THE PDU IS IN MAINS POSITION (MAINTENANCE BYPASS) MODE, THE POWER TO THE CONNECTED LOAD IS NOT FILTERED OR CONDITIONED BY THE UPS. CONNECTED EQUIPMENT GUARANTEE IS NOT VALID WHILE IN THIS MODE OF OPERATION.

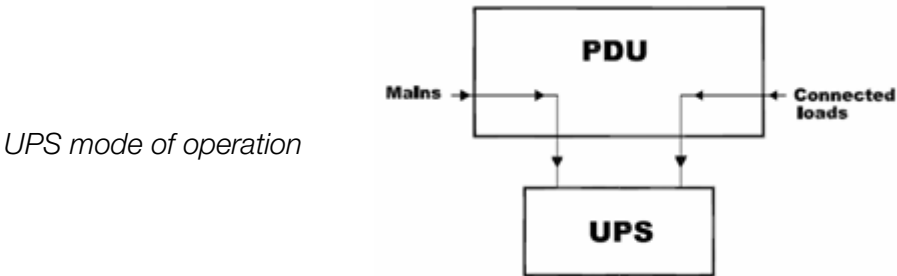
# 2 Description

## 2.1 Introduction

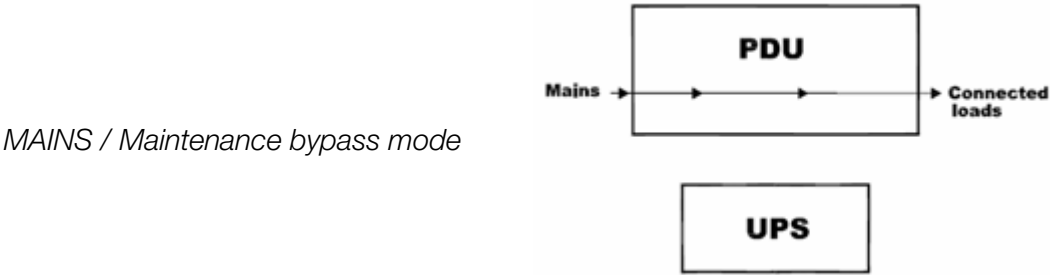
The PDU provides maintenance bypass capability as well as power output distribution. The PDU can be used on UPSs in the rack mount or tower configuration. The PDU provides an isolated path of power for your UPS system for preventive maintenance or service.

## 2.2 System description

The PDU has two modes of operation: UPS (UPS available) and MAINS (maintenance bypass). **In UPS mode, the power is routed through the UPS system delivering conditioned power to the load, as shown in Figure 1.**



**In MAINS mode, the power is routed around (bypassing) the UPS system (see Figure 2). Mains power is supplied directly to the load through the PDU.**



The UPS may be turned off and removed without affecting the load

## 3 Installation

### 3.1 Receipt of the unit and visual inspection

Upon receiving the Bypass PDU, carefully examine the packing container and the unit for any sign of physical damage. In case of damage, notify immediately the carrier.

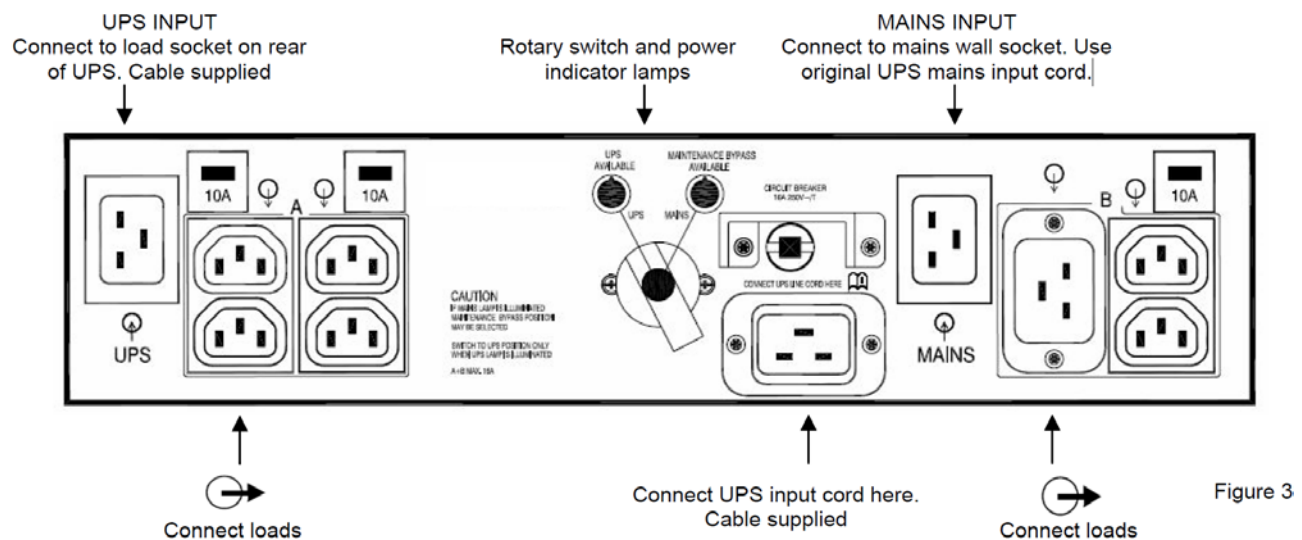
The packing container of the Bypass PDU protects it from mechanical and environmental damage. To increase its protection, the Bypass PDU is wrapped with a plastic sheet. Preserve the packaging for later re-use.

### 3.2 Unpacking

After examining the package, open the carton box and examine the unit for any sign of damage. Ensure that the packaging content corresponds to the following list:

- 1 x Bypass PDU 16 A
- 2 x IEC C19-C20 power cords
- 1 x IEC C14-C19 power cord
- 1 x IEC C13-C20 power cord
- 1 x schuko plug-IEC C19 power cord
- 2 x rack mounting brackets (for 19" racks). 2 x screws provided to attach the brackets to the PDU
- 1 x user manual

### 3.3 PDU connections



This PDU is intended for use with a UPS meeting all the following requirements:

- UPS input cord is compatible with the rating and type of socket on the PDU labeled "CONNECT UPS LINE CORD HERE".
- UPS output socket is compatible with the PDU input power connector labeled "UPS"
- Available mains socket is compatible with the PDU input power connector labeled "MAINS".
- The user must provide a suitable mains power cord with the appropriate country connector. This will usually be the original UPS power cord which has been removed from the UPS mains output.



### 3.4 Rack-mount installation

1. Rack mount installation of the PDU is possible with the use of the rack mounting brackets (shipped with the PDU) See Figure 4.
2. The rack mount brackets allow you to rack mount the PDU in a 19" enclosure (23" to 19" rack adapters would have to be purchased separately if you are using the 23" or equivalent cabinet).
3. The PDU can be mounted to face one of four directions depending on your application, and utilizing the rack mount brackets provided.
4. Determine the desired position and direction for the PDU, face it in that direction, then attach the brackets to the PDU with the screws provided.
5. Consult your rack/enclosure manufacturer's recommendations for specific rack mounting hardware that will be required.
6. The holes on the rack mount bracket are notched for easy installation. Tighten the PDU securely to the rails and then follow the startup directions for the PDU in the previous section, PDU connections.

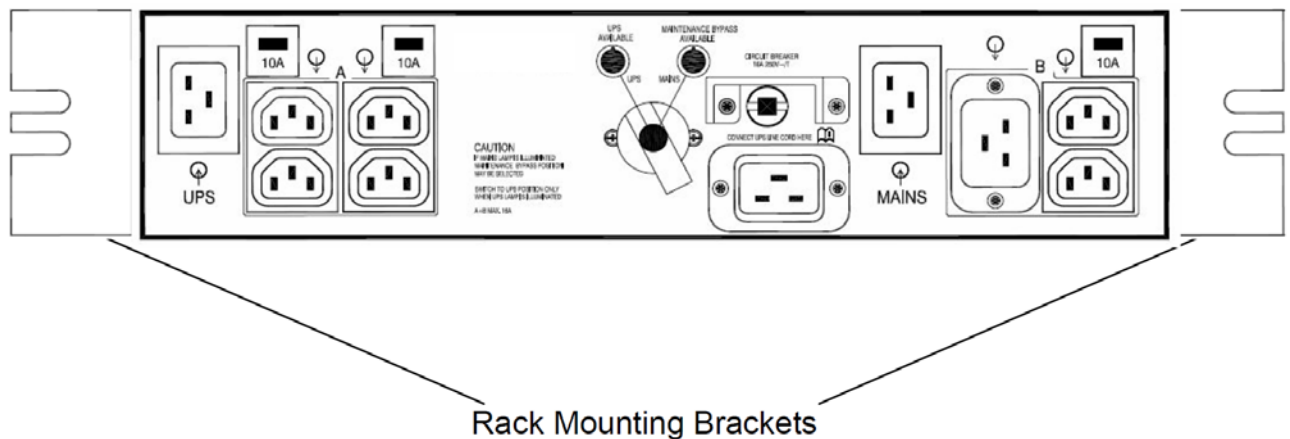


Figure 4 PDU 16 with rack mounting brackets

## 4 Indicator lamps

### 4.1 Mains indicator lamp

This orange lamp is illuminated when mains power is present (see Figure 5). It signals that you may transfer the loads to maintenance bypass (MAINS mode) operation via the rotary switch.

During a mains power outage, this lamp will be off and the UPS will supply battery back-up power to the connected loads.

### 4.2 UPS indicator lamp

This green lamp is illuminated when there is output power available from the UPS (see Figure 5).

It signals that it is safe to transfer the connected loads from mains power back to UPS output power.

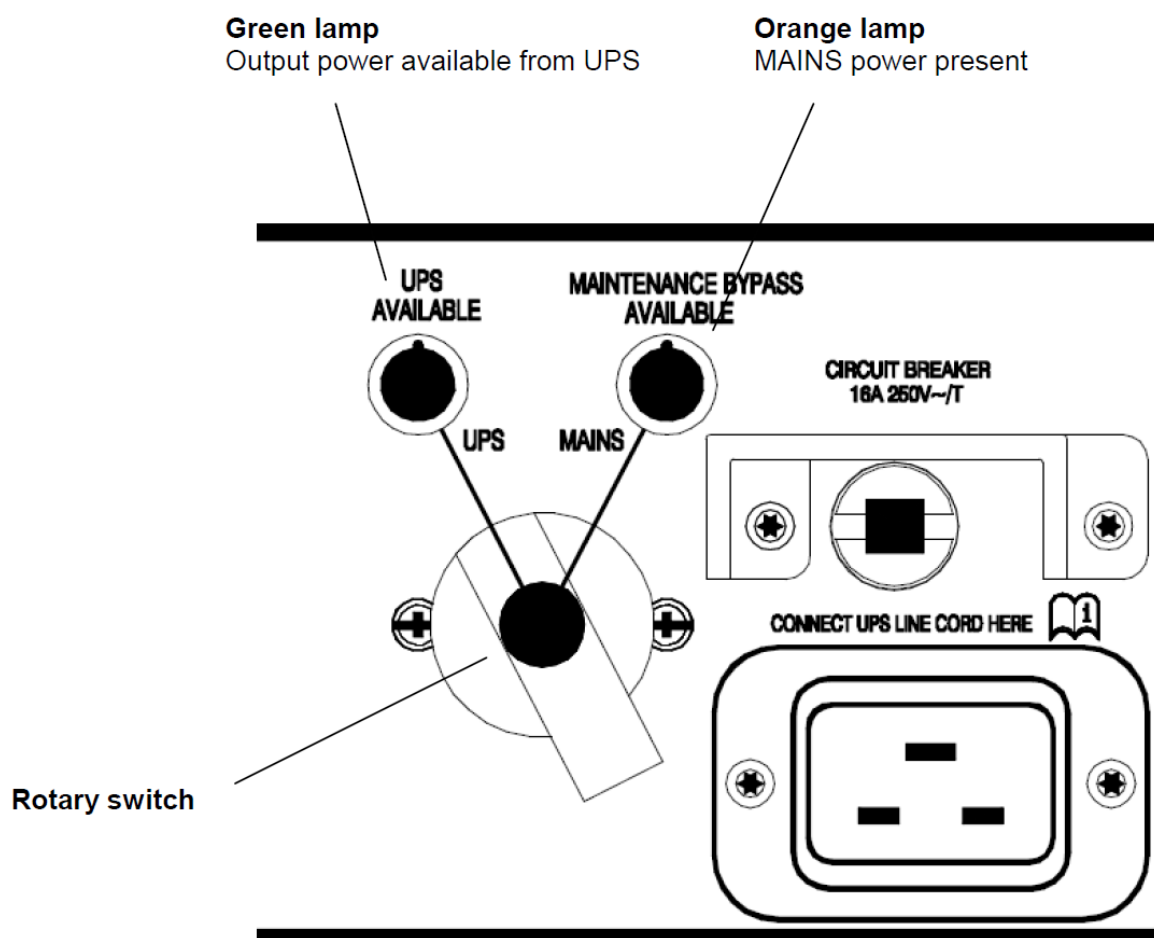


Figure 5

Indicator lamps on PDU 16

## 5 Operation

### 5.1 Transfer to maintenance bypass mode

To transfer to maintenance bypass (mains) from UPS, use the following steps:

1. Ensure the MAINS lamp (orange) is illuminated. If the lamp is not illuminated, refer to Troubleshooting section.
2. Transfer the rotary switch from UPS to MAINS, provide the MAINS lamp is illuminated on the PDU.
3. Turn the UPS off.
4. Disconnect the two cables connecting the UPS to the PDU.
5. You may now service the UPS.

### 5.2 Transfer to UPS mode

To transfer to UPS from maintenance bypass (mains), use the following steps:

1. Reconnect the UPS to the PDU. Start the UPS according to the instructions in the UPS user manual.
2. Verify that UPS lamp (green) on the PDU is illuminated. If so, transfer the rotary bypass switch from MAINS to UPS. If the lamp does not illuminate, refer to Troubleshooting section.
3. Conditioned power is now being supplied through the UPS.

## 6 Troubleshooting

PROBLEM	CAUSE	SOLUTION
MAINS LAMP (ORANGE) NOT ILLUMINATED.	<i>Mains not present.</i>	Call qualified service personnel to restore power to socket.
	<i>Input cord not connected to mains.</i>	Refer to PDU installation instructions in this manual.
UPS AVAILABLE LAMP (GREEN) NOT ILLUMINATED.	<i>UPS output power not present.</i>	Turn on UPS. Refer to UPS user manual.
	<i>UPS input and/or output cord not connected to PDU.</i>	Refer to PDU installation instructions in this manual.
PDU WILL NOT START SOME/ALL CONNECTED LOADS.	<i>PDU output circuit breaker has tripped.</i>	Reset PDU circuit protectors.
PDU CIRCUIT PROTECTORS TRIP AFTER RESETTING.	<i>Overcurrent on PDU socket.</i>	Recalculate load requirements, distribute load among other PDU output sockets.

## 7 Specifications

### PDU

<b>Transfer time (to and from maintenance bypass)</b>	< 6 ms
<b>Operating ambient temperature</b>	0°C to +40°C (32°F to 104°F)
<b>Storage ambient temperature</b>	-20°C to +60°C (-4°F to 140°F)
<b>Dimensions WxDxH: mm (in.)</b>	88 x 77 x 394 (3.5 x 3.0 x 15.5)
<b>Weight: kg (lbs)</b>	4.5 (10)
<b>Humidity</b>	0 to 95% non-condensing
<b>Agency / Standards</b>	CE, EN 60950, ISTA Procedure 1A
<b>Electrical rating</b>	See model label on the PDU

## Contact us

[www.abb.com/ups](http://www.abb.com/ups)  
ups.sales@ch.abb.com

© Copyright ABB. All rights reserved. Specification subjects to change without notice.



CE EAC