

Delta UPS - Amplon Family

RT Series, Single Phase

5/ 6/ 8/ 10 kVA Maintenance Bypass Box

for Single UPS & Parallel UPSs

Installation & Operation Quick Guide

ENGLISH

1 Product Introduction

The Maintenance Bypass Box (MBB) is designed to operate in conjunction with Delta RT series 5/ 6/ 8/ 10kVA UPS. It ensures that the connected critical loads continue to be powered during UPS maintenance or during the unlikely event of a UPS failure.

2 Important Safety Instructions

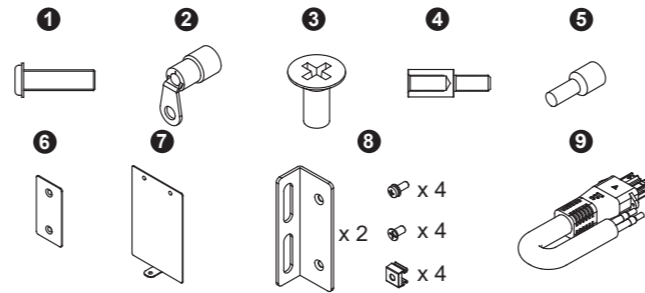
- Only qualified service personnel can perform installation and maintenance of the Maintenance Bypass Box.
- The Maintenance Bypass Box must operate in conjunction with Delta RT series 5/ 6/ 8/ 10kVA UPS. Please refer to the following table.

Maintenance Bypass Box Model	MBB-RT-5K-S (for single UPS application)	MBB-RT-10K-S (for single UPS application)	MBB-RT-10K-P (for parallel UPSs application)
Applicable to Delta RT Series UPS Model	RT 5kVA UPS	RT 5/ 6/ 8/ 10kVA UPS (35 Model) RT 6/ 8/ 10kVA UPS (B8 Model)	RT 5/ 6/ 8/ 10kVA UPS

- Before installation of the Maintenance Bypass Box, please completely turn off the UPS and cut off the input power and battery power (if applicable).
- Failure to properly install the Maintenance Bypass Box may result in severe damage to your UPS or load equipment.
- Please install the Maintenance Bypass Box in an indoor temperature controlled environment that is free of conductive contaminants.
- Do not operate the unit in an extremely dusty/ unclean area or a location near heating devices, water or excessive humidity. Do not expose the unit to direct sunlight.
- Select a location where provides good air circulation for the unit at all times.
- Properly route power cords so they cannot be walked on or damaged.
- The Maintenance Bypass Box must be well grounded due to a possible risk of current leakage.
- The Maintenance Bypass Box is not intended for use in direct patient care or life support applications.

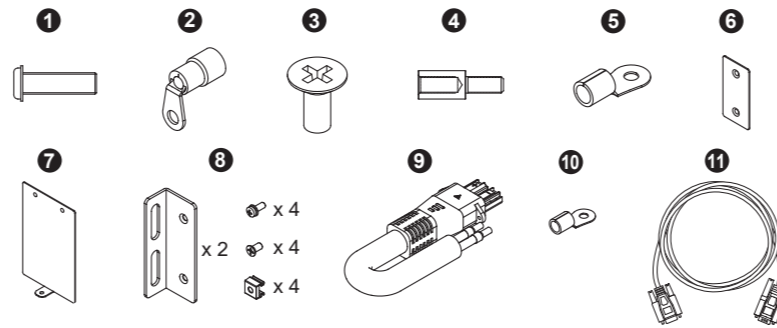
3 Package List

- Model MBB-RT-5K-S (PDB1513A5300B8) & MBB-RT-10K-S (PDB1511A531035/ PD-B1511A5300B8) Maintenance Bypass Box for Single UPS Application



No.	Item	Q'ty
1	M3 Screw	4 PCS
2	CU Terminal (Type A)	2 PCS
3	M4 Screw	10 PCS
4	Standoff	4 PCS
5	CU Terminal (Type B)	6 PCS
6	MBB Ear	1 PC
7	MBB Ear	1 PC
8	MBB Ear	1 SET
9	Wire	2 PCS

- Model MBB-RT-10K-P (PDB1512A511035) Maintenance Bypass Box for Parallel UPSs Application



No.	Item	Q'ty
1	M3 Screw	8 PCS
2	CU Terminal (Type A)	4 PCS
3	M4 Screw	9 PCS
4	Standoff	8 PCS
5	CU Terminal (Type C)	4 PCS
6	MBB Ear	1 PC
7	MBB Ear	1 PC
8	MBB Ear	1 SET
9	Wire	4 PCS
10	CU Terminal (Type D)	2 PCS
11	Parallel Cable	1 PC



NOTE:

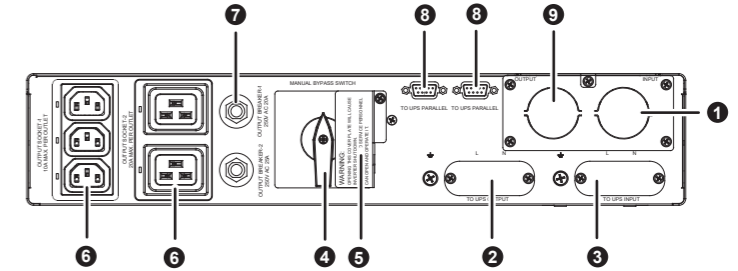
- If there is any damage or anything missing, please immediately contact the dealer from whom you purchased the unit.
- If the Maintenance Bypass Box needs to be returned, carefully repack the Maintenance Bypass Box and all of the accessories using the original packing material that came with the unit.

4 Standard Compliance

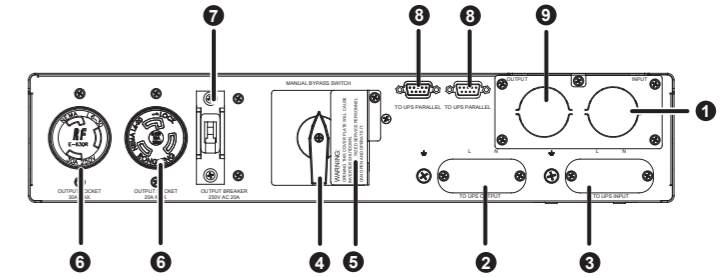
- CE
- EN62040-1
- UL, cUL

5 Front View

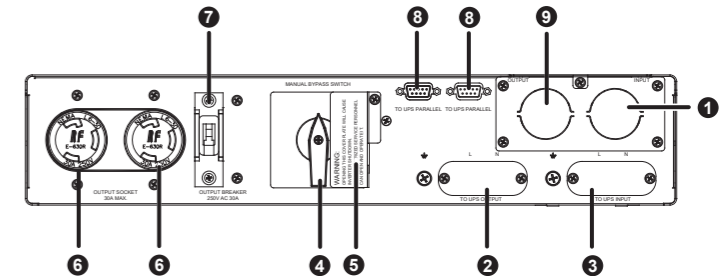
- PDB1511A531035



- PDB1513A5300B8



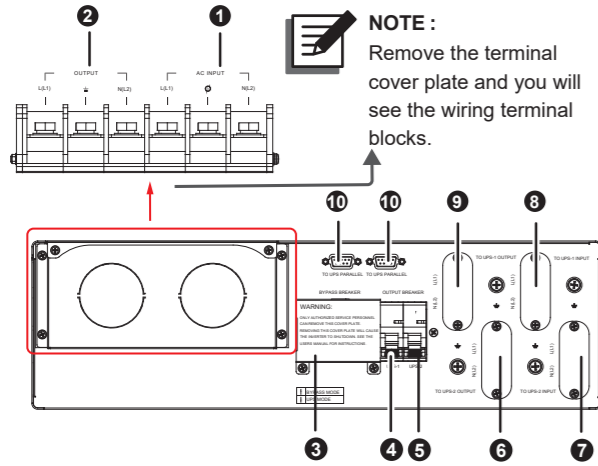
- PDB1511A5300B8



No.	Item (Printed Words on the Front Panel)	Connection
1	Input	Connects to the main AC utility.
2	To UPS Output	Connects to the UPS's output terminals.
3	To UPS Input	Connects to the UPS's AC input terminals.
4	Manual Bypass Switch	No connection is needed. The function is to switch the UPS into manual bypass mode for maintenance without power supply interruption.
5	Warning (This is a Manual Bypass Switch Cover Plate)	No connection is needed. After you unscrew the screw shown in Figure 11 to remove the cover plate, the MBB's detector will automatically activate and send a message to the UPS to ask it to transfer into bypass mode.
6	Output Socket	Connects to the critical loads.

7	Output Breaker	No connection is needed. The function is to prevent the output socket(s) from damage caused by overload.
8	To UPS Parallel	Connects to the UPS's parallel port.
9	Output	Connects to the critical loads.

• PDB1512A511035



No.	Item (Printed Words on the Front Panel)	Connection
1	AC Input	Connects to the main AC utility.
2	Output	Connects to the critical loads.
3	Bypass Breaker	No connection is needed. After you unscrew the two screws shown in Figure 15 to remove the cover plate, the MBB's detector will automatically activate and send a message to the UPS to ask it to transfer into bypass mode.
4	UPS-1 Output Breaker	No connection is needed. The function is to prevent the output terminals from damage caused by overload.
5	UPS-2 Output Breaker	No connection is needed. The function is to prevent the output terminals from damage caused by overload.
6	To UPS-2 Output (L/ N/ \perp)	Connects to the UPS2's UPS OUTPUT terminals (L/ N/ \perp).
7	To UPS-2 INPUT (L/ N/ \perp)	Connects to the UPS2's AC INPUT terminals (L/ N/ \perp).
8	To UPS-1 INPUT (L/ N/ \perp)	Connects to the UPS1's AC INPUT terminals (L/ N/ \perp).
9	To UPS-1 OUTPUT (L/ N/ \perp)	Connects to the UPS1's UPS OUTPUT terminals (L/ N/ \perp).
10	To UPS Parallel	Connects to the UPS's parallel port.

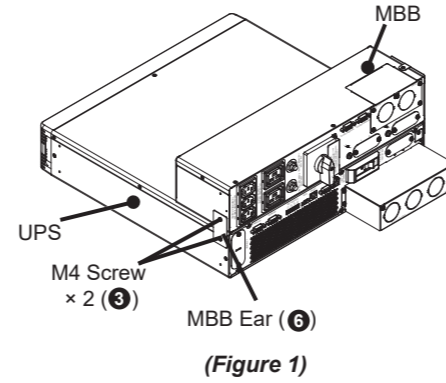
6 How to Install the Maintenance Bypass Box on the Tower Stands

• PDB1511A531035 & PDB1513A5300B8 & PDB1511A5300B8 & PDB1512A511035

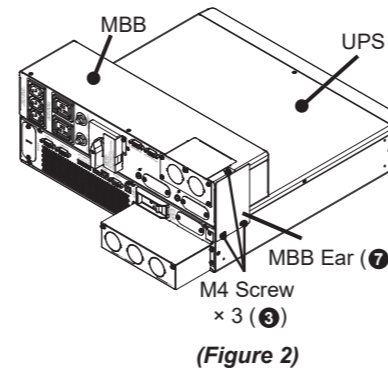
Each model's installation methods are similar. Below, only model PDB1511A531035 is taken for example.

The No. 1 ~ 11 shown in **Figure 1 ~ Figure 10** represent the standard accessories mentioned in **3 Package List**.

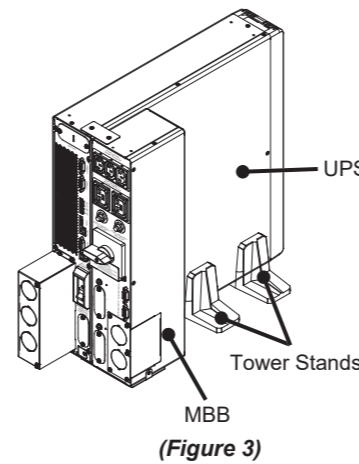
- 1 Fix the MBB Ear (6) at the left side of the UPS and the MBB with two M4 screws (3).



- 2 Fix the MBB Ear (7) at the right side of the UPS and the MBB with two M4 screws (3).



- 3 Stand them upright and place them into the tower stands (please see **Figure 3**).



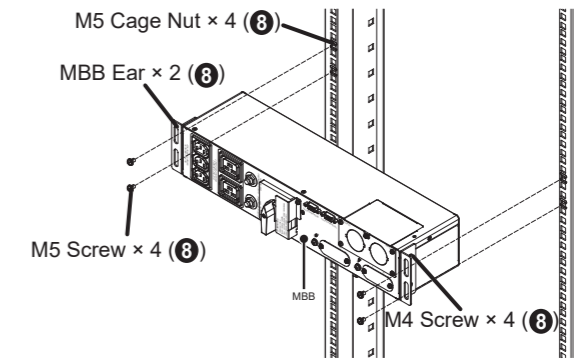
7 How to Install the Maintenance Bypass Box on the Rack

• PDB1511A531035 & PDB1513A5300B8 & PDB1511A5300B8 & PDB1512A511035

Each model's installation methods are similar. Below, only model PDB1511A531035 is taken for example.

The No. 1 ~ 11 shown in **Figure 1 ~ Figure 10** represent the standard accessories mentioned in **3 Package List**.

- 1 Use the four M4 screws (8) to fix the two MBB Ears (8) at the left and right sides of the MBB (please see **Figure 4**).
- 2 Fix the four M5 cage nuts (8) at the two sides of the rack (please see **Figure 4**).
- 3 Use the four M5 screws (8) to secure the MBB on the rack's M5 cage nuts (8) (please see **Figure 4**).



8 Wiring

! WARNING:

Before wiring:

1. Follow **2 Important Safety Instructions**.
2. When connecting the Maintenance Bypass Box to the mains and the loads, you must install protective devices. The protective devices must be approved components that meet safety certifications.
3. Ensure that all of the breakers/ switches are in the **OFF** position before wiring.
4. Please refer to the following table to select appropriate input cables, output cables and protective devices.

• PDB1511A531035 & PDB1513A5300B8 & PDB1511A5300B8:

Rating	5/ 6kVA	8/ 10kVA
Input/ Output Cable	# 8AWG/ 6mm ² (Cu)	# 6AWG/ 10mm ² (Cu)
Protective Device	50A/ D	80A/ D

• PDB1512A511035:

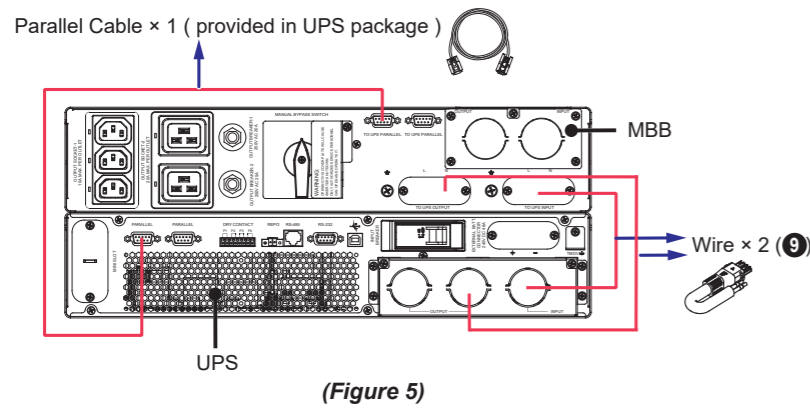
Rating	10/ 12kVA	16/ 20kVA
Input/ Output Cable	# 4AWG/ 16mm ² (Cu)	35mm ² (Cu)
Protective Device	80A/ D	125A/ D

• The No. 1 ~ 11 shown in **Figure 1 ~ Figure 10** represent the standard accessories mentioned in **3 Package List**.

- 1 Please see **Figure 5** and **Figure 6** for a general concept of wiring.

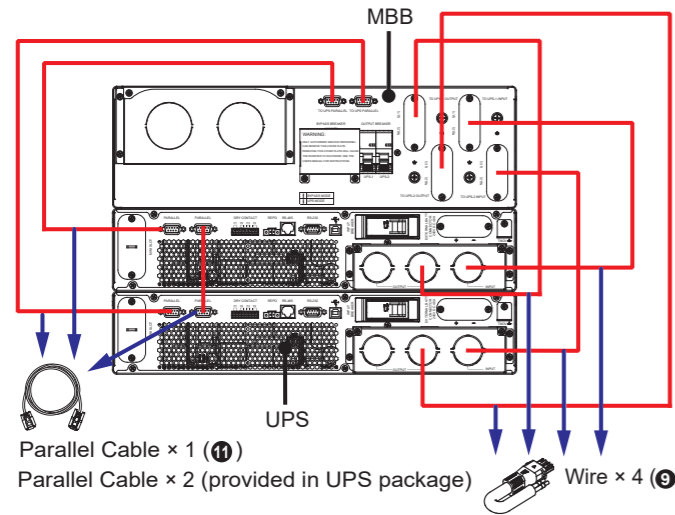
• PDB1511A531035 & PDB1513A5300B8 & PDB1511A5300B8

The installation methods for models PDB1511A531035, PDB1513A5300B8 and PDB1511A5300B8 are similar. Below, only model PDB1511A531035 is taken for example.



(Figure 5)

• PDB1512A511035:

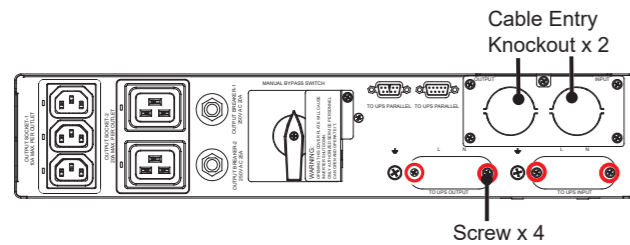


(Figure 6)

2 Remove all of the cover plates' screws and the cable entry knockouts shown in Figure 7 and Figure 8.

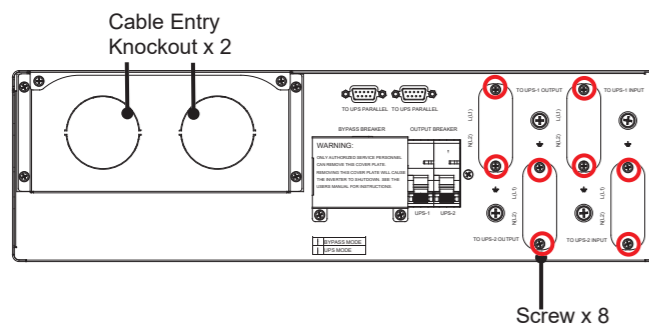
• PDB1511A531035 & PDB1513A5300B8 & PDB1511A5300B8

The installation methods for models PDB1511A531035, PDB1513A5300B8 and PDB1511A5300B8 are similar. Below, only model PDB1511A531035 is taken for example.



(Figure 7)

• PDB1512A511035:

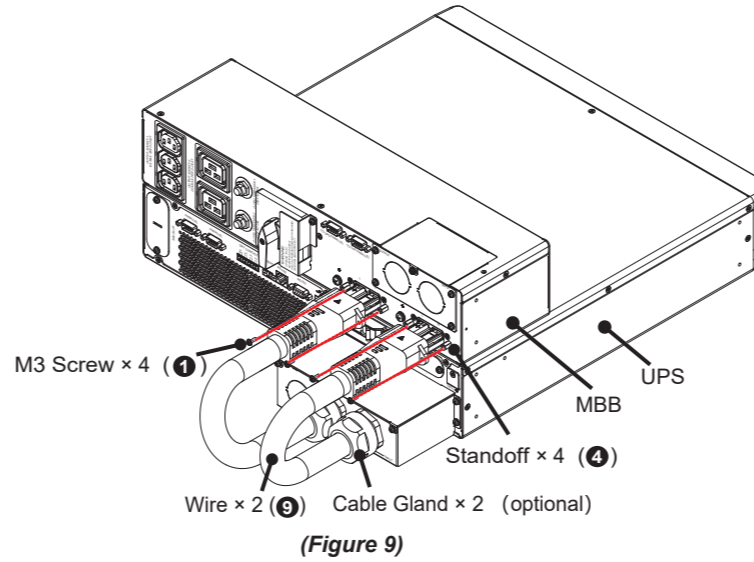


(Figure 8)

3 Follow Figure 9 and Figure 10 to install the provided accessories on the Maintenance Bypass Box and perform wiring. The suggested knockout or hole diameter for optional cable gland is 34.5mm (1-23/ 64 inch).

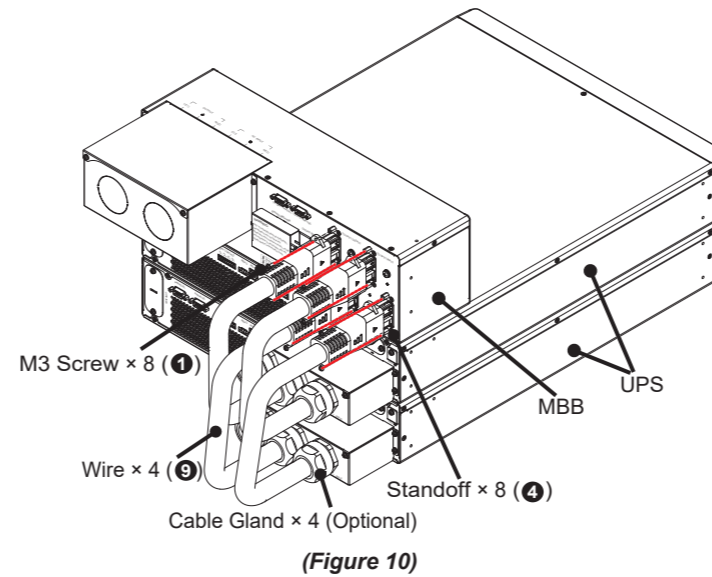
• PDB1511A531035 & PDB1513A5300B8 & PDB1511A5300B8

The installation methods for models PDB1511A531035, PDB1513A5300B8 and PDB1511A5300B8 are similar. Below, only model PDB1511A531035 is taken for example.



(Figure 9)

• PDB1512A511035:



(Figure 10)

9 Start-up Operation

• PDB1511A531035 & PDB1513A5300B8 & PDB1511A5300B8

All the equipment and the UPS system must be properly connected and there must be an acceptable AC voltage present. Please refer to the UPS's user manual for more information.

NOTE: Do not remove the cover plate of the Maintenance Bypass Box's MANUAL BYPASS SWITCH during operation.

- 1 Turn on the input utility breaker at the service panel.
- 2 Turn on the Maintenance Bypass Box's UPS OUTPUT BREAKER.
- 3 Turn on each connected external battery pack's circuit breaker.
- 4 Turn on the UPS's INPUT BREAKER. After that, the fans will turn on and the UPS will run in bypass mode.

NOTE: If there is a power interruption while the UPS is in bypass mode, the connected loads won't be protected.

- 5 Turn on the connected loads.
- 6 Press and hold the UPS's ON/ OFF button for 3 seconds and release it after you hear one beep to turn the UPS on.
- 7 Please refer to the UPS's user manual for more information.

• PDB1512A511035

All the equipment and the UPS system must be properly connected and there must be an acceptable AC voltage present. Please refer to the UPS's user manual for more information.

NOTE: Do not remove the cover plate of the Maintenance Bypass Box's BYPASS BREAKER during operation.

- 1 Turn on the input utility breaker at the service panel.
- 2 Turn on the Maintenance Bypass Box's UPS-1 OUTPUT BREAKER.
- 3 Turn on the Maintenance Bypass Box's UPS-2 OUTPUT BREAKER.
- 4 Turn on each connected external battery pack's circuit breaker.
- 5 Turn on the UPS1's INPUT BREAKER. After that, the fans will turn on and the UPS1 will run in bypass mode.
- 6 Turn on the UPS2's INPUT BREAKER. After that, the fans will turn on and the UPS2 will run in bypass mode.

NOTE: If there is a power interruption while the UPS1 and UPS2 are both in bypass mode, the connected loads won't be protected.

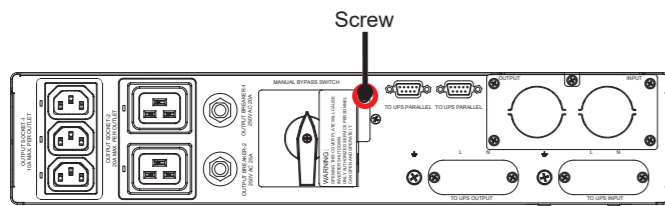
- 7 Turn on the connected loads.
- 8 Press and hold the UPS1's ON/ OFF button for 3 seconds and release it after you hear one beep to turn the UPS1 on.
- 9 Press and hold the UPS2's ON/ OFF button for 3 seconds and release it after you hear one beep to turn the UPS2 on.
- 10 Please refer to the UPS's user manual for more information.

10 Maintenance

• PDB1511A531035 & PDB1513A5300B8 & PDB1511A5300B8

The installation methods for models PDB1511A531035, PDB1513A5300B8 and PDB1511A5300B8 are similar. Below, only model PDB1511A531035 is taken for example.

- 1 Press and hold the UPS's ON/ OFF button for 3 seconds, release it after you hear one beep, use the Scrolling Up or Down button to select 'Yes' and press the Enter button to confirm your selection. The inverter will be off and the UPS will transfer to run in bypass mode.
- 2 Remove the screw shown in Figure 11 to remove the cover plate of the MANUAL BYPASS SWITCH.

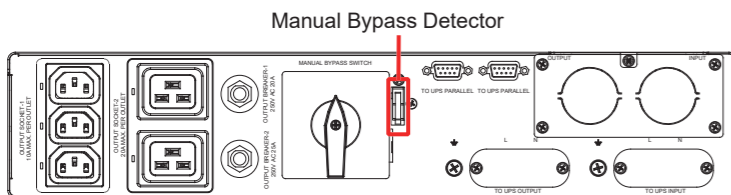


(Figure 11)



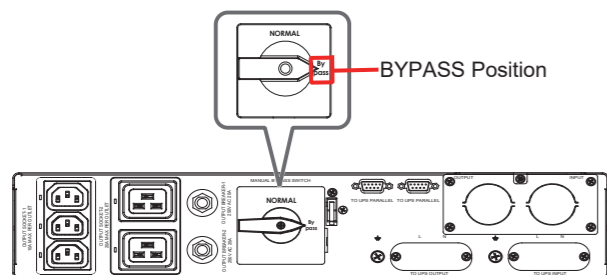
NOTE:

Under the cover plate, there is a manual bypass detector (see **Figure 12**) that will be automatically activated to send the UPS a message of transferring into bypass mode once the cover plate is removed.



(Figure 12)

- 3 After you confirm that the UPS has been run in bypass mode, switch the Box's MANUAL BYPASS SWITCH to the BYPASS position (see **Figure 13**). Now, the connected loads are being powered by the utility power.



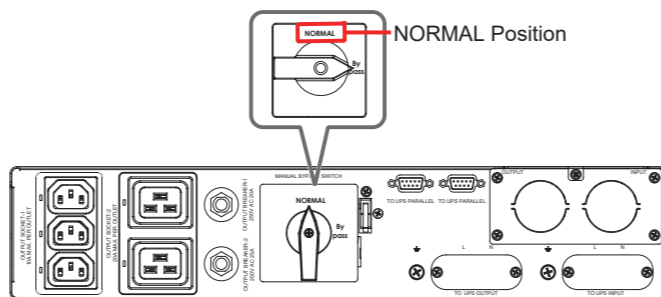
(Figure 13)



NOTE:

If there is a power interruption while the MBB is in the bypass mode, the connected loads won't be protected.

- 4 Turn off the UPS's INPUT BREAKER.
- 5 Turn off each connected external battery pack's circuit breaker.
- 6 Disconnect the battery cables from the UPS and the external battery pack(s).
- 7 Disconnect the power cables from the 'TO UPS INPUT' and 'TO UPS OUTPUT' terminals on the Maintenance Bypass Box.
- 8 Disconnect all of the communication cables from the rear panel of the UPS.
- 9 Now, remove the UPS and the external battery pack(s) and perform maintenance.
- 10 Once the maintenance is completed, re-install the UPS and the external battery pack(s).
- 11 Reconnect all of the battery cables, power cables and communication cables.
- 12 Turn on each connected external battery pack's circuit breaker.
- 13 Turn on the UPS's INPUT BREAKER.
- 14 Turn on the Maintenance Bypass Box's UPS OUTPUT BREAKER.
- 15 Switch the Maintenance Bypass Box's MANUAL BYPASS SWITCH to the NORMAL position (see **Figure 14**).

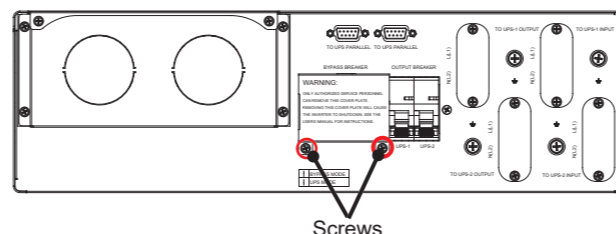


(Figure 14)

- 16 Re-install the cover plate of the MANUAL BYPASS SWITCH on the Maintenance Bypass Box. This will automatically inactivate the manual bypass detector.
- 17 Press and hold the UPS's ON/ OFF button for 3 seconds and release it after you hear one beep to turn the UPS on.
- 18 The UPS system is ready for normal operation. Please refer to the UPS's user manual for more information.

• **PDB1512A511035**

- 1 Press and hold the UPS1's ON/ OFF button for 3 seconds, release it after you hear one beep, use the Scrolling Up or Down button to select 'Yes' and press the Enter button to confirm your selection. The inverter will be off and the UPS1 will transfer to run in bypass mode.
- 2 Press and hold the UPS2's ON/ OFF button for 3 seconds, release it after you hear one beep, use the Scrolling Up or Down button to select 'Yes' and press the Enter button to confirm your selection. The inverter will be off and the UPS2 will transfer to run in bypass mode.
- 3 Remove the screws shown in **Figure 15** to remove the cover plate of the BYPASS BREAKER.

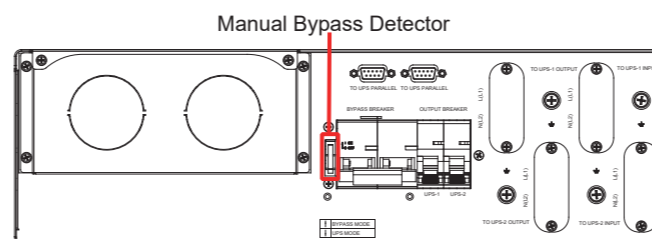


(Figure 15)



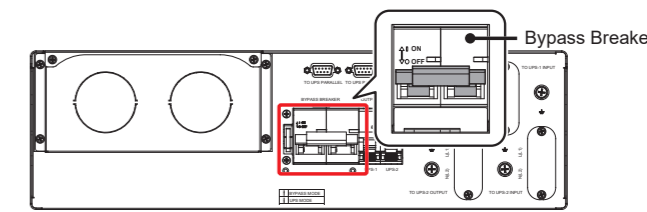
NOTE:

Under the cover plate, there is a manual bypass detector (see **Figure 16**) that will be automatically activated to send the UPS a message of transferring into bypass mode once the cover plate is removed.



(Figure 16)

- 4 After you confirm that both of UPS1 and UPS2 have been run in bypass mode, switch the Maintenance Bypass Box's BYPASS BRAKER to the ON position. The ON/ OFF printing is marked on the BYPASS BREAKER (see **Figure 17**). Now, the connected loads are being powered by the utility power.



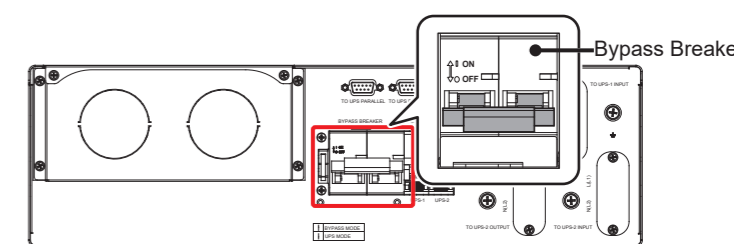
(Figure 17)



NOTE:

If there is a power interruption while the MBB is in bypass mode, the connected loads won't be protected.

- 5 Turn off the UPS1's INPUT BREAKER.
- 6 Turn off the UPS2's INPUT BREAKER.
- 7 Turn off each connected external battery pack's circuit breaker.
- 8 Turn off the Maintenance Bypass Box's UPS-1 OUTPUT BREAKER.
- 9 Turn off the Maintenance Bypass Box's UPS-2 OUTPUT BREAKER.
- 10 Disconnect the battery cables from the UPS1 and the external battery pack(s).
- 11 Disconnect the battery cables from the UPS2 and the external battery pack(s).
- 12 Disconnect the power cables from the 'TO UPS-1 INPUT' and 'TO UPS-1 OUTPUT' terminals on the Maintenance Bypass Box.
- 13 Disconnect the power cables from the 'TO UPS-2 INPUT' and 'TO UPS-2 OUTPUT' terminals on the Maintenance Bypass Box.
- 14 Disconnect all of the communication cables from the rear panel of the UPS1 and UPS2.
- 15 Now, remove UPS1, UPS2 and the external battery pack(s) and perform maintenance.
- 16 Once the maintenance is completed, re-install UPS1, UPS2 and the external battery pack(s).
- 17 Reconnect all of the battery cables, power cables and communication cables.
- 18 Turn on each connected external battery pack's circuit breaker.
- 19 Turn on the UPS1's INPUT BREAKER.
- 20 Turn on the UPS2's INPUT BREAKER.
- 21 Turn on the Maintenance Bypass Box's UPS-1 OUTPUT BREAKER.
- 22 Turn on the Maintenance Bypass Box's UPS-2 OUTPUT BREAKER.
- 23 Switch the Maintenance Bypass Box's BYPASS BREAKER to the OFF position. The ON/ OFF printing is marked on the BYPASS BREAKER (see **Figure 18**).



(Figure 18)

- 24 Re-install the cover plate of the BYPASS BREAKER on the Maintenance Bypass Box. This will automatically inactivate the manual bypass detector.
- 25 Press and hold the UPS1's ON/ OFF button for 3 seconds and release it after you hear one beep to turn the UPS1 on.
- 26 Press and hold the UPS2's ON/ OFF button for 3 seconds and release it after you hear one beep to turn the UPS2 on.
- 27 The UPS system is ready for normal operation. Please refer to the UPS's user manual for more information.



NOTE:

If you encounter any problems that you cannot solve, please ask your local dealer or customer service for more information. Do not attempt to solve the problems if you are not trained for it.

11 Technical Specifications

Model No.		MBB-RT-5K-S	MBB-RT-10K-S	MBB-RT-10K-P
Input	Nominal Voltage	200/ 208/ 220/ 230/ 240 Vac		
	Frequency	50/ 60Hz		
	Current (Max.)	25A	63A	125A
	Connection	Terminal Block		
Output	Nominal Voltage	200/ 208/ 220/ 230/ 240 Vac		
	Frequency	50/ 60Hz		
	Power (Max.)	5kVA/ 5kW	10kVA/ 10kW	20kVA/ 20kW
	Connection	Terminal block x 1, L6-20 x 1, L6-30 x 1	Terminal block x 1, C13 x 3, C19 x 2 (for 35 model) Terminal block x 1, L6-30 x 2 (for B8 model)	Terminal block x 1
Environment	Operating Altitude	0 ~ 3000 m (0 ~ 10000 ft); 0 ~ 1000 m (0 ~ 3300 ft) (without derating)		
	Operating Temperature	0°C ~ 55°C*1 (32 ~ 131°F)		
	Storage Temperature	-15°C ~ 55°C (-59 ~ 131°F)		
	Relative Humidity	5 ~ 95% (non-condensing)		
Physical	Dimensions (W x D x H)	440 x 120 x 88 mm (17.3" x 4.7" x 3.5")	440 x 120 x 88 mm (17.3" x 4.7" x 3.5")	440 x 120 x 130 mm (17.3" x 4.7" x 5.1")
	Weight	3.1 kg (6.8 lb)	2.9 kg (6.4 lb) (for 35 mode) 3.2 kg (7.1 lb) (for B8 model)	5.6 kg (12.3 lb)



NOTE:

- *1: When the operating temperature is at 40 ~ 55°C (104 ~ 131°F), the MBB will be de-rated to 75% of its capacity.
- Refer to the rating label for the safety rating.
- All specifications are subject to change without prior notification.

12 Warranty

Seller warrants this product, if used in accordance with all applicable instructions, to be free from original defects in material and workmanship within the warranty period. If the product has any failure problem within the warranty period, Seller will repair or replace the product at its sole discretion according to the failure situation.

This warranty does not apply to normal wear or to damage resulting from improper installation, operation, usage, maintenance or irresistible force (i.e. war, fire, natural disaster, etc.), and this warranty also expressly excludes all incidental and consequential damages. Maintenance service for a fee is provided for any damage out of the warranty period. If any maintenance is required, please directly contact the supplier or Seller.



WARNING:

The individual user should take care to determine prior to use whether the environment and the load characteristic are suitable, adequate or safe for the installation and the usage of this product. The Quick Guide must be carefully followed. Seller makes no representation or warranty as to the suitability or fitness of this product for any specific application.

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