



Maintenance Bypass Box

for Single UPS

Installation & Operation Guide

About this Guide

This guide contains information about installing and operating the Delta Maintenance Bypass Box for Single UPS (MBB-S). Before you install this unit, please read the safety instructions below.

Save these Instructions

This guide contains instructions and warnings that should be followed during the installation, operation and storage of this product. Failure to heed these instructions and warnings will void the product warranty.

Safety Precautions

To reduce the risk of personal injury from electric shock, you must observe the following safety precautions when placing, installing, operating, or performing maintenance on the Delta MBB-S.

Warnings!

This product is designed for indoor use only in a controlled environment away from excess moisture, temperature extremes, conductive contaminants, dust or direct sunlight.

- Do not connect the MBB-S to an ungrounded outlet or extension cords or adapters that eliminate the connection to ground
- Do not use this equipment in the presence of flammable substances.
- The power requirement for each piece of equipment connected to the MBB must not exceed the individual outlet's load rating.
- Do not drill into or attempt to open any part of the MBB housing. There are no user serviceable parts inside.
- Do not modify the MBB-S.
- Do not use the MBB-S if any part of it becomes damaged.
- Never install electrical equipment during a thunderstorm.

Precautions for Rack Mounting

- Elevated Operating Ambient** - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.
- Reduced Air Flow** - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- Mechanical Loading** - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading** - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Earthing** - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (such as use of power strips).

Maintenance with Input Power

Delta strongly recommends that you do not perform maintenance on the MBB-S if it is receiving input power.

- To reduce your risk of personal injury by electric shock, you must:
 - Be a certified electrician trained in live electrical installation
 - Always work with another qualified person
 - Know how to disconnect electricity to the MBB and data center in case of emergency
 - Wear the right protective equipment
 - Use double-insulated tools
 - Strictly follow local and site regulations

Electromagnetic Interference

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.

1. MBB-S Overview

The Delta Maintenance Bypass Box for Single UPS (MBB-S) lets you isolate a single UPS from the load without interrupting power to essential applications. This allows you to perform scheduled UPS maintenance or UPS replacement without disrupting power. The MBB-S easily transfers power between normal and bypass mode using a rotary switch.

2. Package Contents

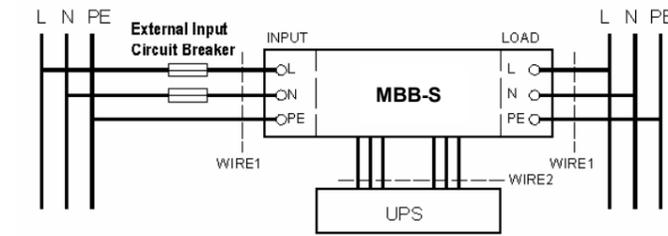
The Delta MBB-S package should contain the following items:

Quantity	Item
1pcs	MBB-S
1set	Fixing Plate
1set	Ear bracket
1pcs	Parallel Cable
1pcs	MBB-S Installation & Operation Guide
4pcs	Cable gland
12pcs	Terminal

3. Installing the MBB-S

CAUTION:

- A licensed electrician must install the Delta MBB-S.
- The UPS unit must be switched off and unplugged before installation.
- Install a utility circuit breaker for input wiring. Refer to the drawing & table below.



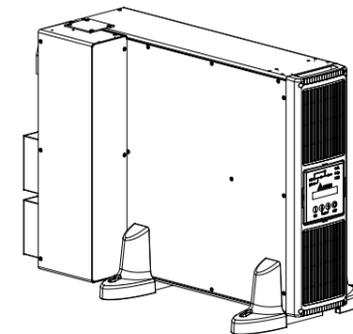
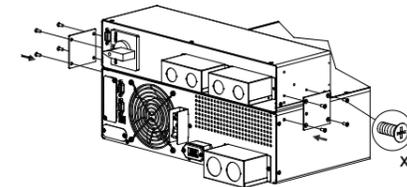
System	Voltage		Current Full Load Nominal		External Input Circuit Breaker Typical		Wire Size Typical (mm ²)	
	Input	Output	Input	Output	For 5/7k UPS	For 9/11k UPS	For 5/7k UPS	For 9/11k UPS
MBB-S	200/208/220/230/240Vac		50A		40A 2Pole	63A 2Pole	8	10

Remark: The External Input Circuit Breaker must use the components approved for its safety certification.

4. Fixing the MBB-S

4-1. Tower Configuration

- Place the MBB-S on the top rear of the UPS unit.
- Locate and align the fixing holes on the MBB-S and UPS unit. Use a screwdriver to fasten the fixing plates with the provided screws and attach the MBB-S to the UPS unit.
- Place the UPS and MBB-S in the upright tower position and secure the mounting feet.

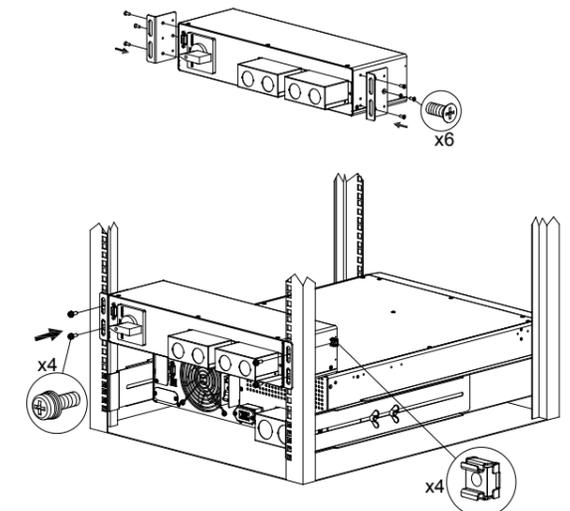


(The mounting feet are provided with the UPS or from a dealer.)

Fig. 1

4-2. Rack-mount Configuration

- Attach the mounting brackets to the MBB-S using the M4*6mm screws that came with the brackets.
- Choose a location in the rack for the MBB-S.
- Install the MBB-S on your rack using the screws and cage nuts.



(The screws and cage nuts are provided with the rack frame.)

Fig. 2

5. Making Connections

The steps below show you how to connect power cables so the path of AC power flows through the MBB-S to the UPS, or alternately, bypassing the UPS and directly to the connected load.

- Unscrew and remove the cable entry boxes on the MBB-S. See Fig. 3.

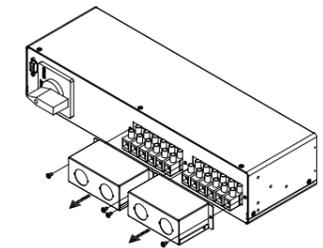


Fig. 3

- Attach the cable glands to the cable entry boxes. Insert the cables through the cable glands and then insert the leads of the cables into the terminal blocks and fasten screws. See Fig. 4.

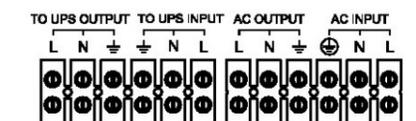
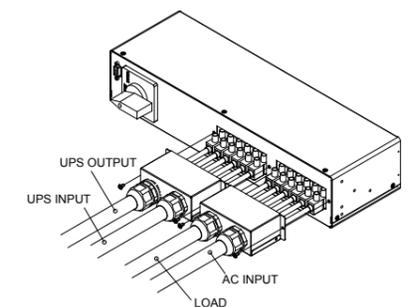


Fig. 4

- 5-3. Fasten the cable entry boxes to the MBB-S unit and then fasten the cables with the locking nuts of the cable glands. See Fig. 5.

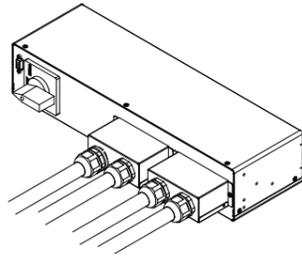


Fig. 5

- 5-4. After connecting power cables to the MBB-S, make connections to the UPS units as below. See Fig. 6.

- a. Connect the parallel cable from the MBB-S to UPS.
- b. Connect the power cables from the MBB-S to UPS.

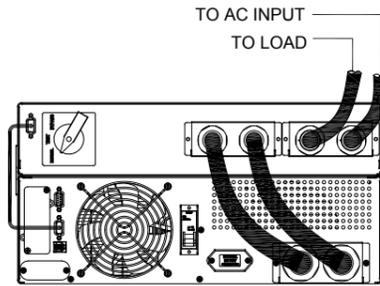
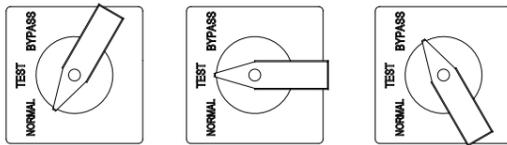


Fig. 6

6. Operation

CAUTION:

- You must put the UPS units in maintenance bypass mode before switching modes.
- Please see your UPS operation guide for instructions.



6-1. Switching to Bypass Mode

When the MBB-S rotary switch is set to Bypass Mode the MBB-S is providing an alternate path for the AC power to the connected load.

1. Place the UPS into maintenance bypass mode according to the instructions in your UPS operation manual.
2. Turn the rotary switch to the Test position. Note that power is still present at the UPS terminals at the Test Position.
3. Shut down the UPS according to your UPS shutdown instructions.
4. Turn the rotary switch to the Bypass position to isolate the UPS from your power source.

6-2. Switching to Normal Mode

When the MBB-S rotary switch is set to Normal the UPS is supplying the connected load with AC power. The load is protected by the UPS.

1. Turn the rotary switch to the Test position. Note that power is still present at the UPS terminals at the Test Position.
2. Put the UPS into maintenance bypass mode according to the instructions in your UPS operation manual.

3. Turn the rotary switch to the Normal position to isolate the UPS from your power source.
4. Put the UPS into normal operating mode according to the instructions in your UPS operation manual.

7. Environmental

Temperature: Operating: 0°C to 40°C;
Storage: -15°C to 50°C.

Altitude: Operating: 0 to 6,600 feet (0 to 2000 meters);
Non-operating: 0 to 49,000 feet (0 to 15,000 meters).

Humidity: Operating: 5 to 95% relative humidity (non-condensing);
Non-operating: 5 to 95% relative humidity (non-condensing).

8. Warranty

Seller warrants this product, if used in accordance with all applicable instructions, to be free from original defects in material and workmanship for its lifetime. If the product should prove defective in material or workmanship within that period, Seller will repair or replace the product, at its sole discretion.

THIS WARRANTY DOES NOT APPLY TO NORMAL WEAR OR TO DAMAGE RESULTING FROM ACCIDENT, MISUSE, ABUSE OR NEGLIGENCE. SELLER MAKES NO EXPRESS WARRANTIES OTHER THAN THE WARRANTY EXPRESSLY SET FORTH HEREIN. EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ALL IMPLIED WARRANTIES, INCLUDING ALL WARRANTIES OF MERCHANTABILITY OR FITNESS, ARE LIMITED IN DURATION TO THE WARRANTY PERIOD SET FORTH ABOVE; THIS WARRANTY EXPRESSLY EXCLUDES ALL INCIDENTAL AND CONSEQUENTIAL DAMAGES.

WARNING: The individual user should take care to determine prior to use whether this device is suitable, adequate or safe for the use intended. Since individual applications are subject to great variation, the manufacturer makes no representation or warranty as to the suitability or fitness of these devices for any specific application.