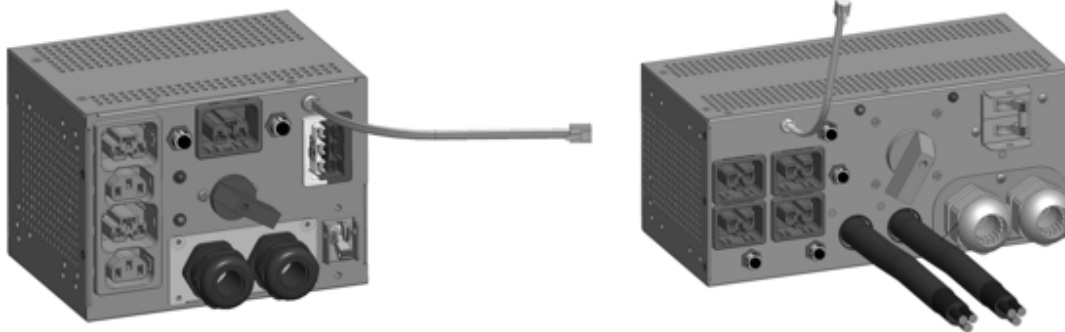




# MBP Advanced User Guide



## Eaton 9PX Gen2

MBP6KIG2  
MBP11KIG2

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# 1 MBP Special symbols

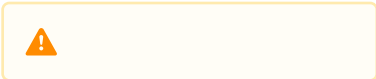
The following are examples of symbols used on the UPS or accessories to alert you to important information:



**DANGER:** Dangerous voltage levels are present within the UPS. The UPS has its own internal power source (the battery). Consequently, the power outlets may be energized even if the UPS is disconnected from the AC power source.



**CAUTION:** Batteries present a risk of energy or electrical shock or burn from high short circuit current. Observe proper precaution. Batteries may contain HIGH VOLTAGE and CORROSIVE, TOXIC and EXPLOSIVE substances.



Important instructions that must always be followed.



Information, advice, help.



Read the documentation provided.



Disconnect input plug.



Before maintenance, first shut down the UPS then disconnect the AC power source, internal and external batteries then discharge capacitors by pressing the ON button and wait 5 minutes.



This equipment should only be used in a dry indoor environment.



Operating range of temperature.

Operating range of humidity.



The UPS and their batteries must be kept in a ventilated place.



Alternating Current (AC)



Direct Current (DC)



## 2 MBP Introduction

Thank you for selecting an Eaton product to protect your electrical equipment.

The HotSwap MBP range has been designed with the utmost care.

Before installing your Eaton HotSwap MBP, please read the information and safety instructions provided. Follow the instructions in the quick start guide and if necessary, refer to this advanced user guide.

To discover the entire range of Eaton products, we invite you to visit our web site at [eaton.com](http://eaton.com) or contact your Eaton local representative.

### 2.1 Environmental protection

Eaton has implemented an environmental-protection policy. Products are developed according to an eco-design approach.

#### Substances

This product contains no CFC, HCFC or asbestos. This product is compliant with regulations on the restriction of the use of substances in electrical and electronic equipment.

#### Packaging

To improve waste treatment and facilitate recycling, separate the various packing components. Follow local regulations for the disposal of packing materials.

- Packing materials are recyclable and bear the appropriate identification symbol .
- The cardboard we use comprises over 50% of recycled cardboard.
- Plastic bags are made of polyethylene.

| Materials                  | Abbreviations | Number in the symbols  |
|----------------------------|---------------|-------------------------------------------------------------------------------------------------------------|
| Polyethylene terephthalate | PET           | 01                                                                                                          |
| High-density polyethylene  | HDPE          | 02                                                                                                          |
| Polyvinyl chloride         | PVC           | 03                                                                                                          |
| Low-density polyethylene   | LDPE          | 04                                                                                                          |
| Polypropylene              | PP            | 05                                                                                                          |
| Polystyrene                | PS            | 06                                                                                                          |

#### End of life

Eaton will process products at the end of their service life in compliance with local regulations. Eaton works with companies in charge of collecting and eliminating our products at the end of their service life.

#### Product

The product is made from materials that can be recycled. Dismantling and destruction must take place in compliance with all local regulations concerning waste. At the end of its service life, the product must be transported to a processing center for electrical and electronic waste. [eaton.com/recycling](http://eaton.com/recycling)

### 2.2 Benefits

The Eaton HotSwap MBP module makes it possible to service or even replace the UPS without affecting the connected loads (HotSwap function).

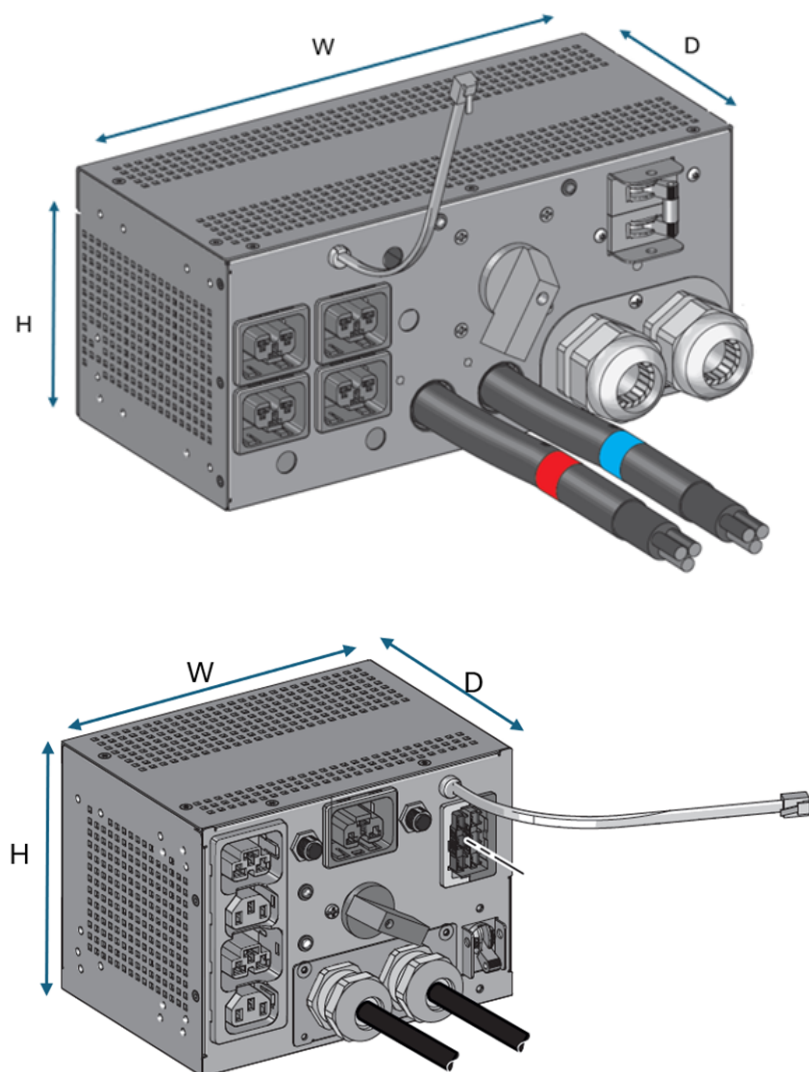
Eaton HotSwap MBP's unique benefits include:

- Easy and fast connection to UPS due to Input/Output and signal “all in one” patented connector (Hotswap MBP 5/6kVA range)
- “Make before break” feature to allow full servicing (electrical power continuity) when switching from UPS position to Bypass (and vice versa)

- Communication feature with UPS\*: detection of MBP connection and switch position (Normal or Bypass) (\* works only with some approved EATON UPS - contact your Eaton reseller for more information)
- Load connection by both terminal blocks and IEC outlets
- Adjustable 19" Rack kit and multiple positions Tower installation kit provided
- Backed by worldwide agency approvals

## 3 MBP Presentation

### 3.1 MBP Weights and dimensions



| Description (MBP) | Weights (kg / lb) | Dimensions (mm / inch) D x W x H |
|-------------------|-------------------|----------------------------------|
| MBP6KIG2          | 2.0 / 4.4         | 125x177x130 / 4.9x7.0x5.1        |
| MBP11KIG2         | 4.6 / 10.1        | 285x130x130 / 11.2x5.1x5.1       |

## 3.2 MBP Product description

The HotSwap MBP has a manual Bypass rotary switch with two positions:

- **UPS** => the load is supplied by the UPS
- **Bypass** => the load is supplied directly by the AC power source

2 lights indicate the Hotswap MBP power status:

- **"UPS supply"** green light: when active, the UPS output is available, the Bypass switch can be safely turned to UPS position
- **"Bypass mode"** red light: when active, indicates that the Hotswap MBP is on "Bypass mode" (Bypass switch turned to Bypass position)

### Normal AC source switch:

Allow to safely switch off the AC source of the UPS, for UPS maintenance / replacing

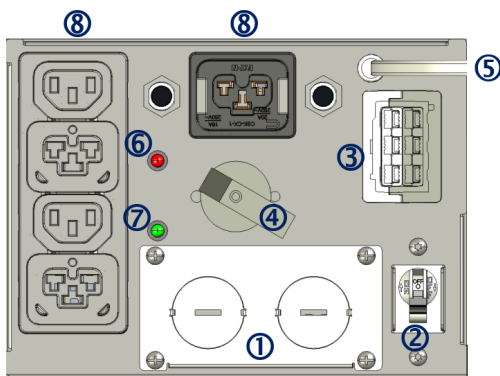
### MBP status detection:

A signal cable, with RJ11 connector to plug to the UPS, allows the communication to the UPS to manage the MBP status, and the indication on UPS display panel of both following status:

- MBP connection to UPS
- Bypass switch position

## 3.3 MBP MBP Rear Panels

### MBP6KiG2



- ① Input/Output terminal blocks
- ② Normal AC source switch
- ③ Input/Output to UPS
- ④ Manual Bypass switch
- ⑤ MBP-Detection connector to the UPS
- ⑥ "Bypass" mode red light
- ⑦ UPS supply green light
- ⑧ Sockets:  
MBP6KiG2: 1 x C39 + 1 gang of 2 x C39 & 2x C13  
MBP11KiG2: 4 x C39
- ⑨ Breakers  
MBP6KiG2: 2 x 16A  
MBP11KiG2: 2 x 20A

### MBP11KiG2



## 4 MBP Installation

### 4.1 MBP Inspecting the equipment

If any equipment has been damaged during shipment, keep the shipping cartons and packing materials for the carrier or place of purchase and file a claim for shipping damage. If you discover damage after acceptance, file a claim for concealed damage.

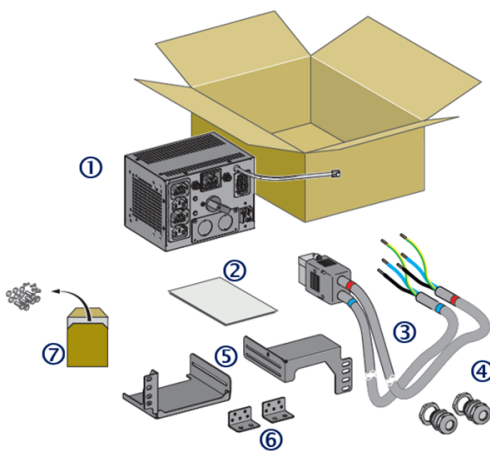
To file a claim for shipping damage or concealed damage:

1. File with the carrier within 15 days of receipt of the equipment
2. Send a copy of the damage claim within 15 days to your service representative

#### MBP MBP package content

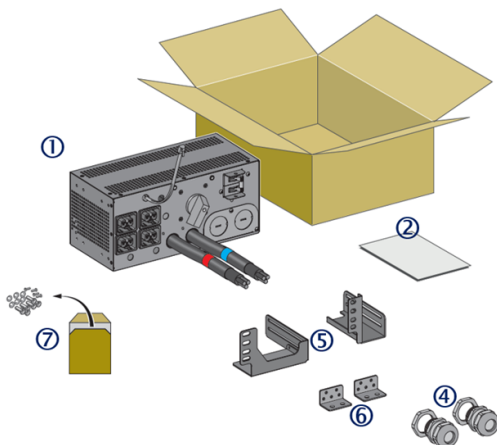
Verify that the following additional items are included with the MBP:

##### MBP6KIG2



- ① MBP
- ② Quick start
- ③ MBP Cord set (For 6k MBP only)
- ④ Cable glands
- ⑤ Ears for rack mounting
- ⑥ MBP fixation ears
- ⑦ Kraft envelop with screws

##### MBP11KIG2



## 4.2 MBP Connection with MBP

 In the configuration "UPS + EBM", the MBP must be mounted at the back of EBM.

For the MBP used with 8000VA and 11000VA UPS, depending on the configuration, there are two different assemblies,

 A

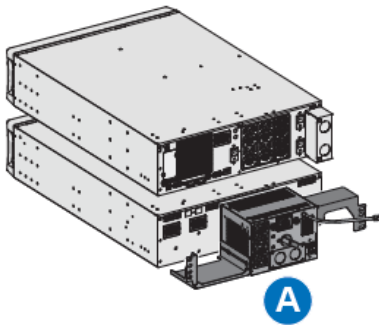
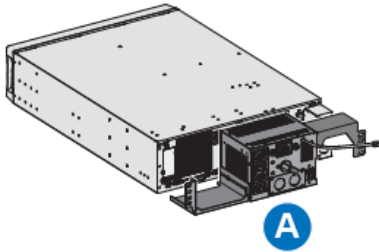
 B

identified with letters (UPS only) and (UPS+EBM)

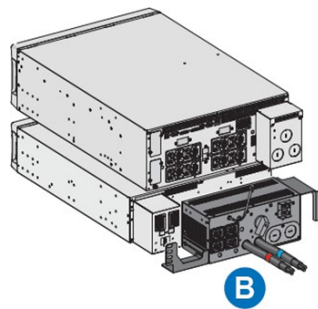
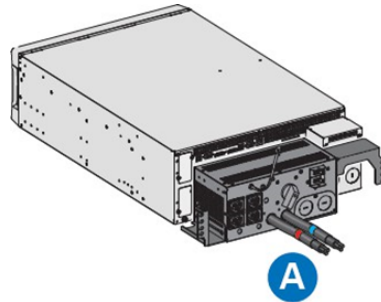
Follow the steps below to install the MBP in rack position

Final assembly position

MBP6KIG2 used with 5000VA and 6000VA UPS

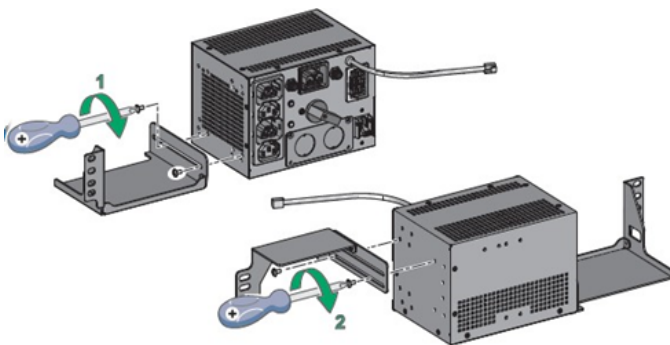


MBP11KIG2 used with 8000VA and 11000VA UPS

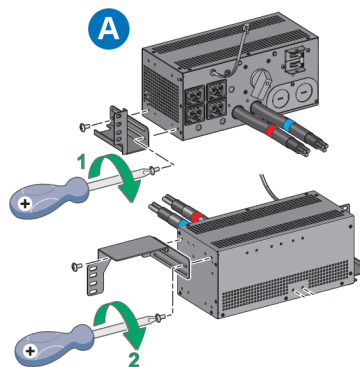


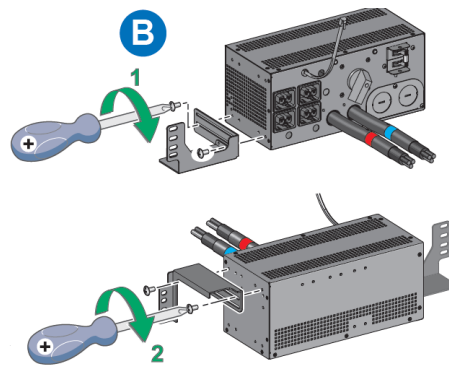
1. Screw the ears on each MBP side.

MBP6KIG2 used with 5000VA and 6000VA UPS



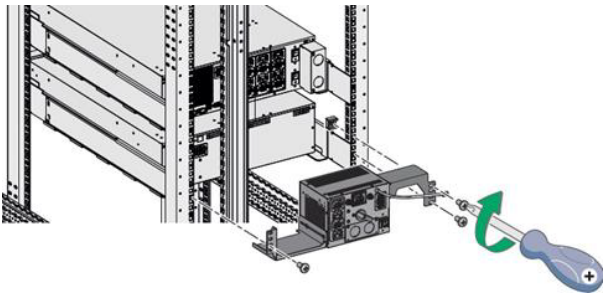
MBP11KIG2 used with 8000VA and 11000VA UPS



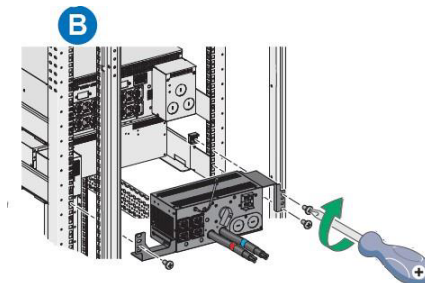
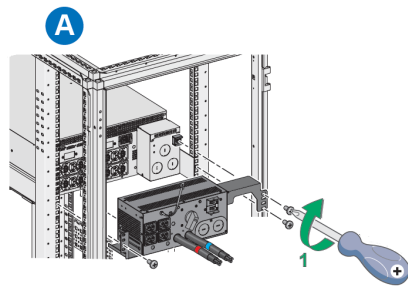


2. Mount the MBP with its ears on the UPS rack.

MBP6KIG2 used with 5000VA and 6000VA UPS



MBP11KIG2 used with 8000VA and 11000VA UPS



Follow the steps below to install the MBP in tower position

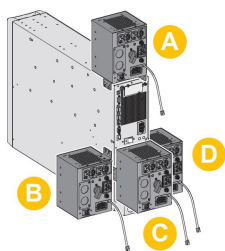
Depending on the configuration, there are four different assemblies, identified with letters A, B, C and D.

The different ways to mount the MBP with the UPS or the "UPS+EBM" are identified by the A, B, C & D letters.

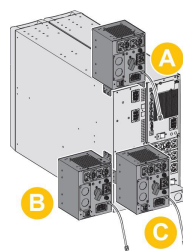
Final assembly position

MBP6KIG2 used with 5000VA and 6000VA UPS

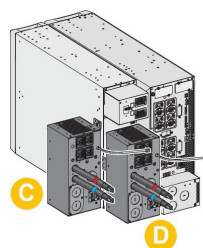
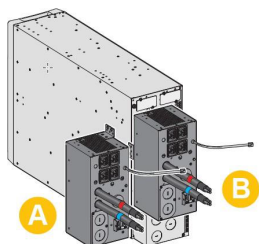
MBP6KiG2 used with 5000VA and 6000VA UPS + 180V EBM



MBP11KiG2 used with 8000VA and 11000VA UPS



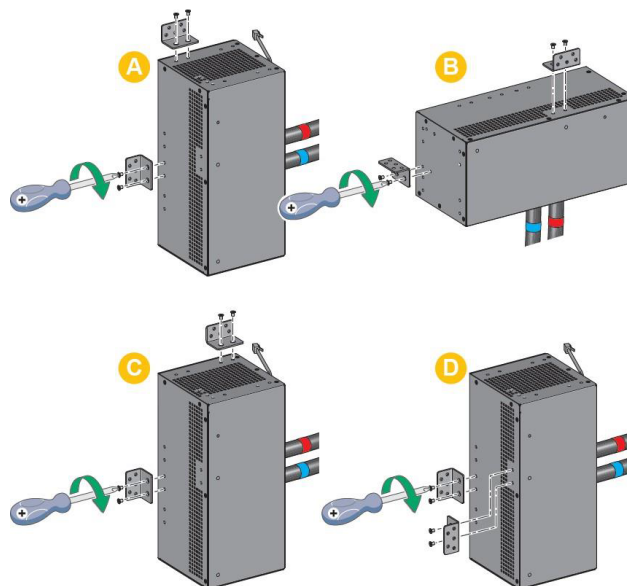
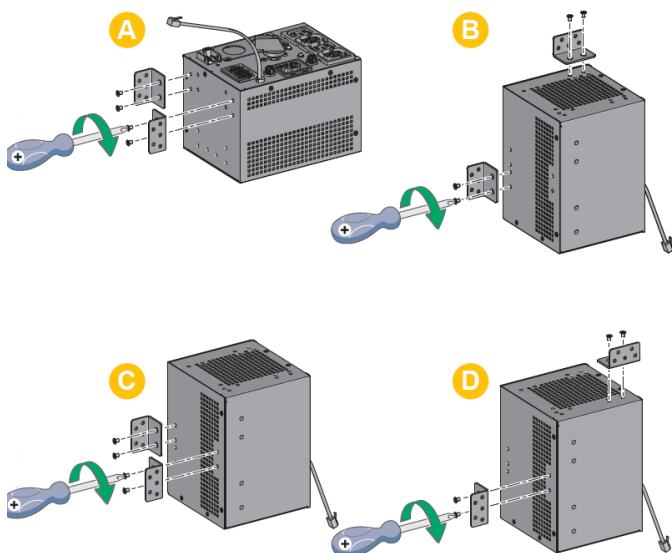
MBP11KiG2 used with 8000VA and 11000VA UPS + 240V EBM



1. Screw the ears on each MBP side.

MBP6KiG2 used with 5000VA and 6000VA UPS

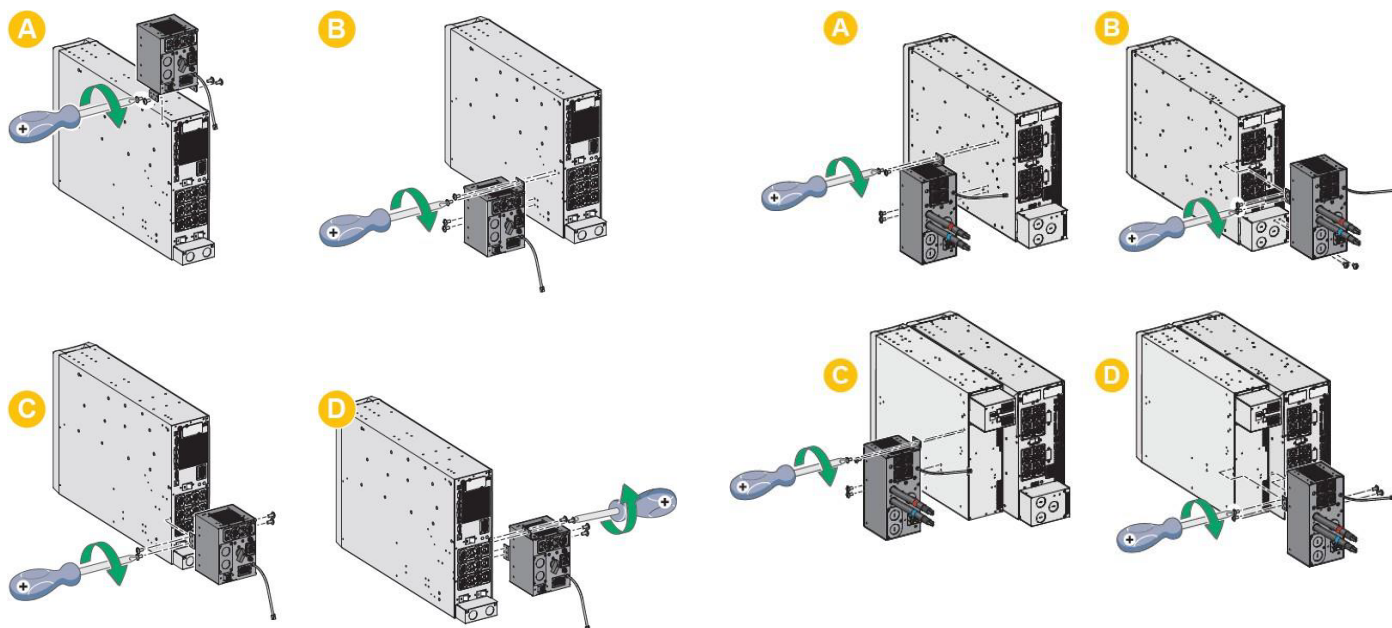
MBP11KiG2 used with 8000VA and 11000VA UPS



2. Mount the MBP with its ears on the UPS or EBM

MBP6KiG2 used with 5000VA and 6000VA UPS

MBP11KiG2 used with 8000VA and 11000VA UPS

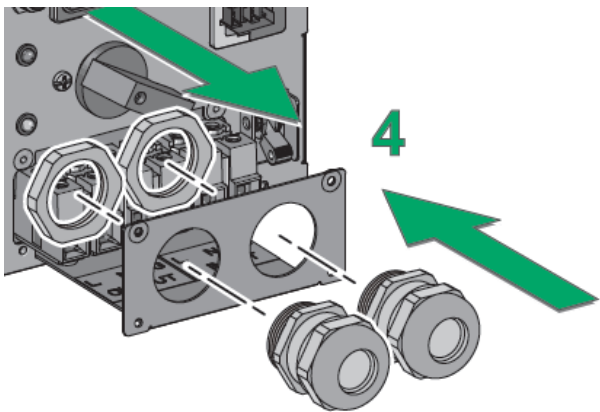
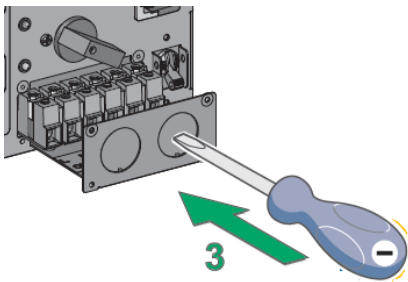
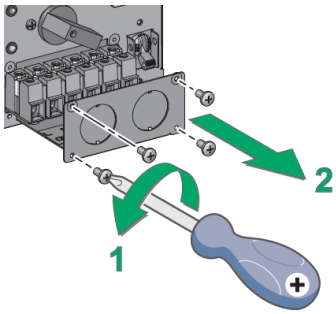


## MBP electrical connection



⚠ Caution: Manually trip the input circuit breaker of your installation before connecting the supply cables.  
Access to the terminal block, remove the circular covers and screw the cable glands.

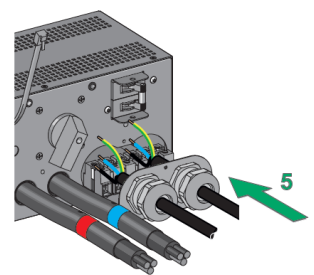
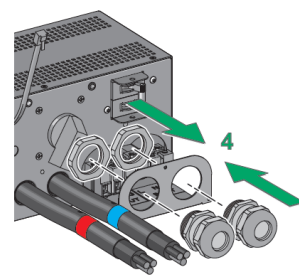
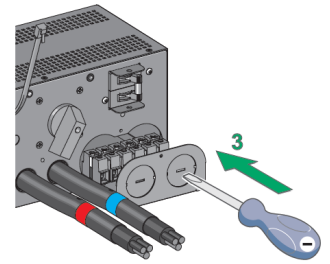
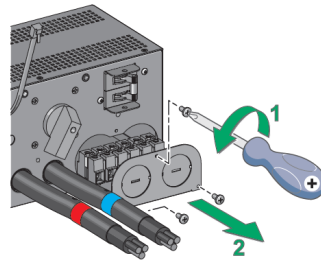
## MBP 6k



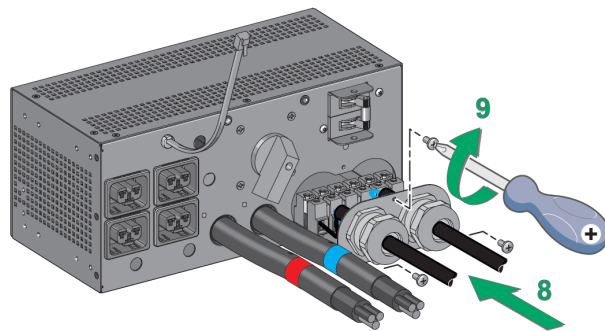
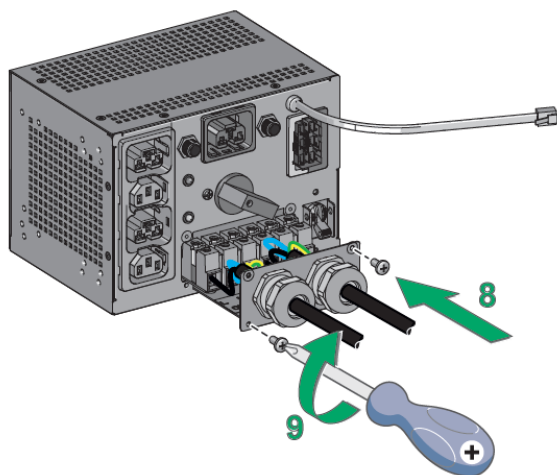
Close the I/O box terminal

## MBP 6k

## MBP 11k



## MBP 11k



**⚠ Follow below instructions for upstream protection and cable cross section.**

**⚠ Use copper cable only, and not aluminum.**

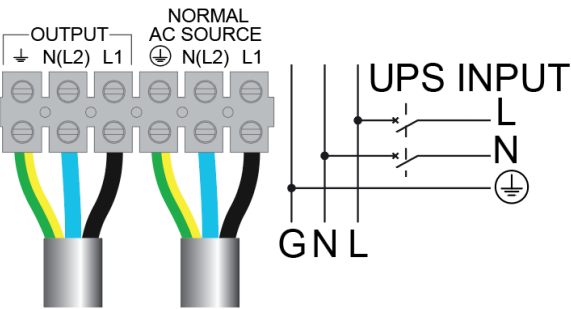
### Recommended upstream protection

| UPS Power Rating                 | Upstream circuit breaker (CB) |
|----------------------------------|-------------------------------|
| 5000VA                           | D curve 2 poles - 32A         |
| 6000VA                           | D curve 2 poles - 40A         |
| 8000VA                           | D curve 2 poles - 50A         |
| 11000VA (Standard installation*) | D curve 2 poles - 63A         |
| 11000VA (Advanced installation)  | D curve 2 poles - 80A         |

Do not use 30 mA RCD/ELCB breaker upstream the UPS

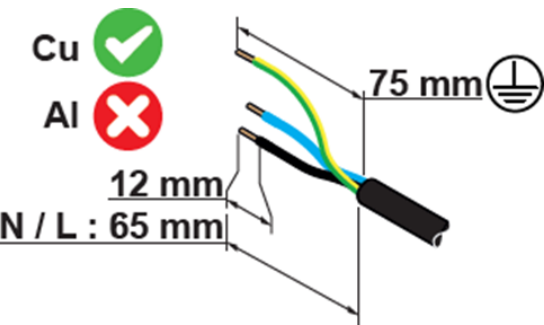
\* If the UPS load is less than 90%; Or the total battery Ah less than 20Ah, the UPS will limit the charger current to 4A ( $0.2 \times 20 = 4A$ ), in this case, you could select the 70A( in US and CSA) / 63A(others) upstream circuit breaker. (these conditions are not certified)

Recommended cable cross-sections for standard installation



| Configuration                                                                                                                                                                                                                                                                                                                      | Minimum input wire size      |       |                                                                                   | Minimum output wire size   |       |                                                                                     | Min Tightening torque | Terminal wire size rating |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------|-----------------------------------------------------------------------------------|----------------------------|-------|-------------------------------------------------------------------------------------|-----------------------|---------------------------|
|                                                                                                                                                                                                                                                                                                                                    | L1                           | N(L2) |  | L1                         | N(L2) |  |                       |                           |
| 9PX5KIRTNG2 + MBP6KIG2                                                                                                                                                                                                                                                                                                             | 6 mm <sup>2</sup> * / 10 AWG |       |                                                                                   | 6 mm <sup>2</sup> / 10 AWG |       |                                                                                     | 16 lb-in              | 16 mm <sup>2</sup> / 6AWG |
| 9PX6KIRTNG2 + MBP6KIG2                                                                                                                                                                                                                                                                                                             | 6 mm <sup>2</sup> / 8 AWG    |       |                                                                                   | 6 mm <sup>2</sup> / 8 AWG  |       |                                                                                     |                       |                           |
| 9PX8KIRTNG2+ MBP11KIG2                                                                                                                                                                                                                                                                                                             | 10 mm <sup>2</sup> * / 6 AWG |       |                                                                                   | 10 mm <sup>2</sup> / 8 AWG |       |                                                                                     | 22 lb-in              | 25 mm <sup>2</sup> / 4AWG |
| 9PX11KIRTNG2+ MBP11KIG2                                                                                                                                                                                                                                                                                                            | 10 mm <sup>2</sup> * / 4 AWG |       |                                                                                   | 10 mm <sup>2</sup> / 6 AWG |       |                                                                                     |                       |                           |
| <ul style="list-style-type: none"><li>⚠ High leakage current, the minimum cross-section of protective earthing conductor of 10mm<sup>2</sup> Cu shall be selected.</li></ul> <p>Note: For Supply connections, use wires suitable for at least 90°C copper or equivalent.<br/>AWG used in US/CSA, mm<sup>2</sup> used in others</p> |                              |       |                                                                                   |                            |       |                                                                                     |                       |                           |

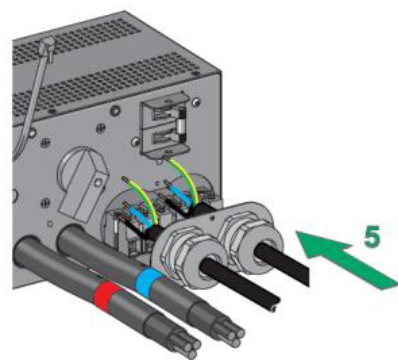
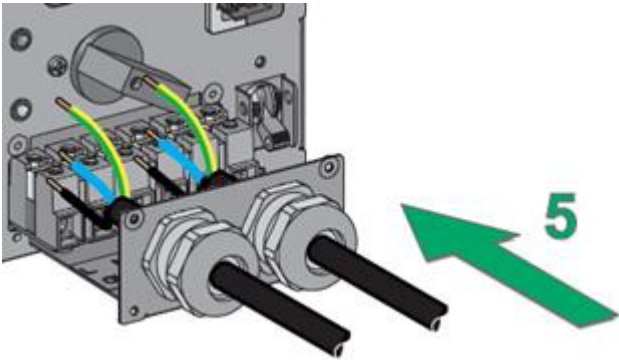
⚠ Strip the copper supply cable keeping the Earth cable longer for safety purpose.



Insert the cables

**MBP 6k**

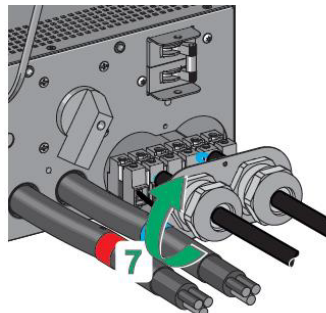
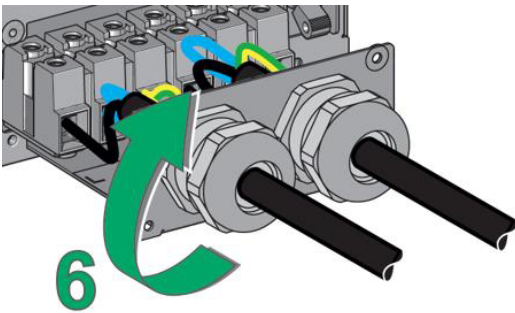
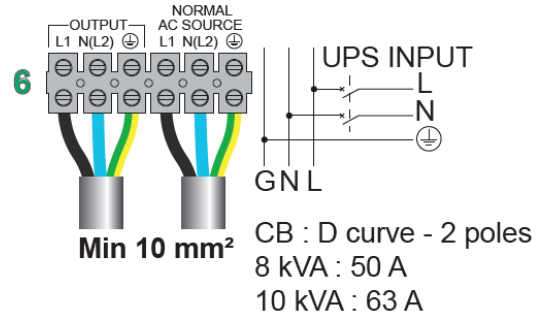
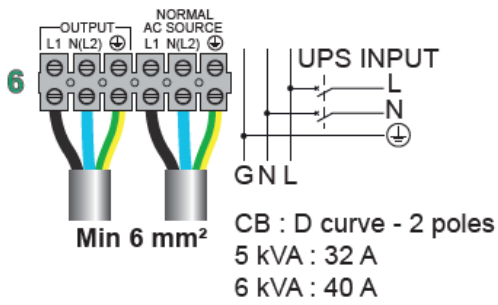
**MBP 11k**



Tighten well the cable glands

#### MBP 6k

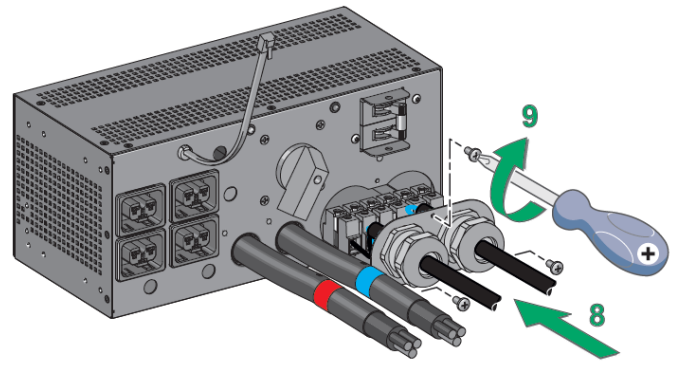
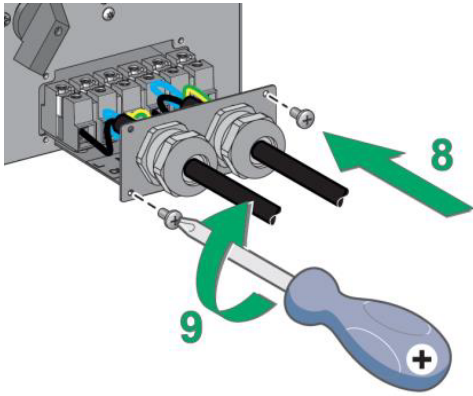
#### MBP 11k



Close the I/O box terminal

#### MBP 6k

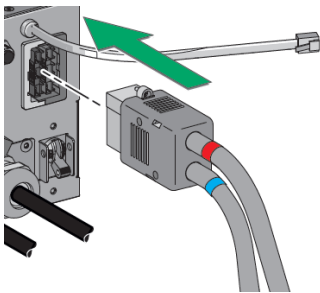
#### MBP 11k



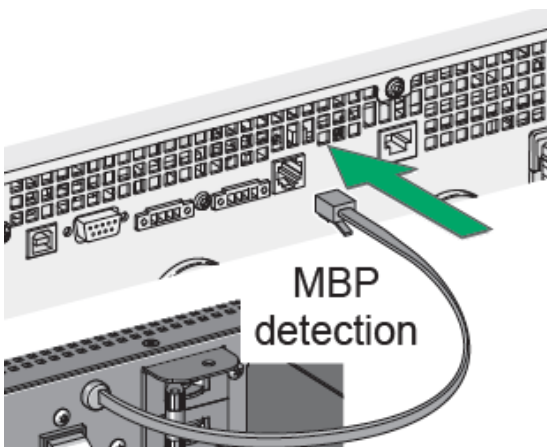
## Connection between MPB and UPS

**⚠** For the electrical connection on the UPS side, follow the steps described in the chapter "Hardwired connection"

Connect the MBP cord set (For 6k MBP only)

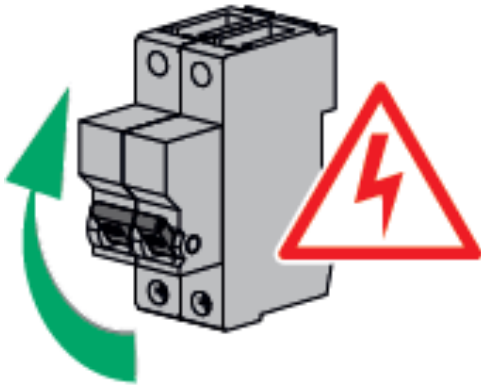


Connect the MBP detection cable to the UPS



## Power up your installation

Switch on the input circuit breaker of your installation. The installation is powered up and can be used.



### HotSwap MBP module test

Set Manual Bypass switch to Bypass position and check that the load is still supplied.

Set Manual Bypass switch back to Normal position.

## 5 MBP Interfaces and communication

Not applicable

## 6 MBP Operation

### 6.1 MBP Starting the UPS with HotSwap MBP

**⚠** Verify that the total equipment ratings do not exceed the UPS capacity to prevent an overload alarm.

1. Check that the UPS is correctly connected to the HotSwap MBP.

**⚠** **If the UPS is equipped with outlets**, those outlets can no longer be used (loads can only be connected to the MBP outlets or the MBP Output terminal blocks)

2. Verify that the MBP terminal blocks are connected to the AC source.

3. Check that the MBP manual Bypass switch is to the **"Bypass" position**.



4. Set the upstream circuit breaker (not provided) to the "I" (On) position to switch on the utility power.

5. Verify that the **"Bypass mode" red light** of the MBP goes On, indicating that the load is now powered by the AC source.

6. Set the Normal AC source switch of the MBP to the "I" (On) position.

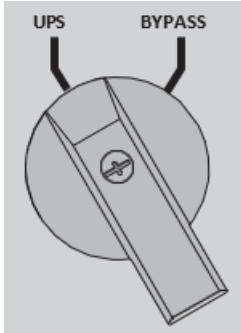
7. Verify that the UPS is correctly powered (UPS display panel illuminates).

8. Press the UPS **"ON"** button to start the UPS.

9. Put the UPS in **"Bypass mode"** (**"Control -> Go to bypass"**).
10. Verify that the UPS is on Bypass mode by checking UPS display panel.
11. Verify that the **"UPS mode" green light** of the MBP goes On, indicating that the UPS output power is available on the MBP.

**Important:** do not continue to next step if the **"UPS mode" green light** of the MBP is still Off (the load will be lost).

12. Set the MBP manual Bypass switch to the **"UPS" position**: the **"Bypass mode" red light** of the MBP goes Off, indicating that the load is now powered by the UPS.



13. Put the UPS in **"Normal mode"**. ("Control -> Go back normal")
14. Check that the UPS is in normal mode by checking UPS display panel. The load is now protected by the UPS.

## 7 MBP UPS maintenance

### 7.1 MBP UPS replacement with HotSwap MBP

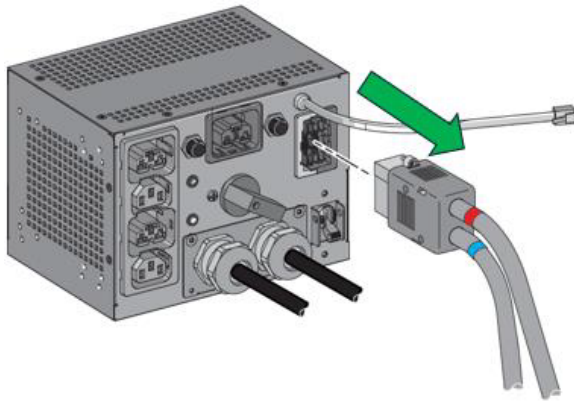
**⚠** Go to maintenance Bypass operation (please follow the MANDATORY steps below)

#### MBP6KiG2:

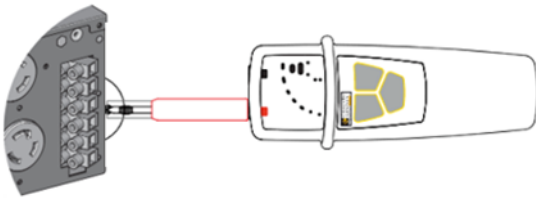
1. Put the UPS in **"Bypass mode"** (**"Control -> Go to bypass"**)



2. Verify that the UPS is on Bypass mode by checking UPS display panel
3. Set the MBP manual Bypass switch to "Bypass" position. The "Bypass mode" red light of the MBP goes On, indicating that the load is supplied directly by AC source
4. Switch the Normal AC source switch of the MBP to the "0" position and wait 30 seconds
5. UPS stops, the UPS can now be disconnected, as described below:
  - First disconnect the I/O cord Set from the MBP, after removing the 2 screws.



- ⚠ After opening the UPS I/O terminal blocks cover, check if hazardous voltage is no longer present on UPS terminal blocks by using a Voltage Absence Tester.



- Disconnect the 2 power cables of the MBP I/O cord Set, and the MBP detection cable.
- Replace the UPS.

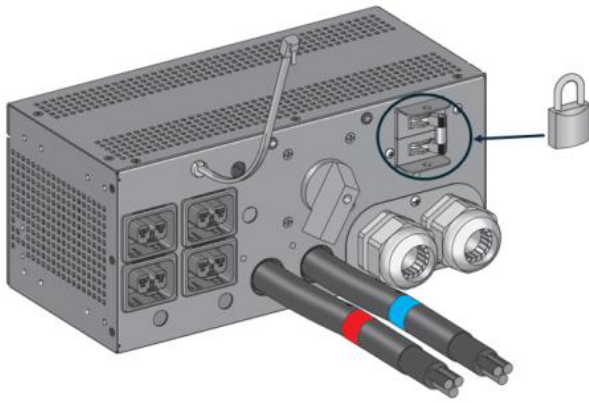
⚠ Hazardous voltage and lost load risk: do not manipulate the MBP manual Bypass switch without UPS connected via the I/O cord Set.

## MBP11KiG2:

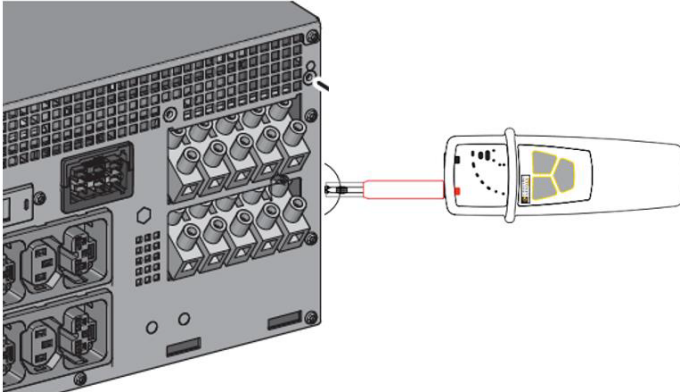
1. Put the UPS in **"Bypass mode"** (**"Control -> Go to bypass"**)



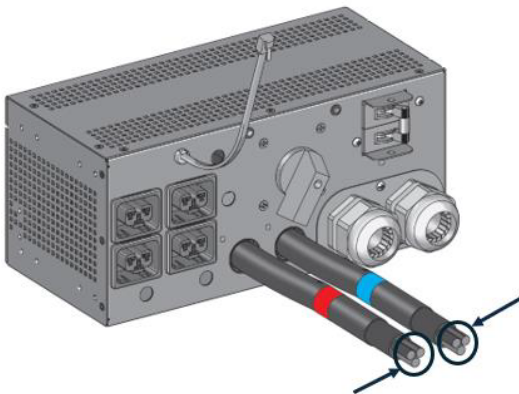
2. Verify that the UPS is on Bypass mode by checking UPS display panel
3. Set the MBP manual Bypass switch to **"Bypass"** position. The **"Bypass mode" red light** of the **MBP** goes On, indicating that the load is supplied directly by AC source
4. Switch the Normal AC source switch of the MBP to the "0" position and wait 30 seconds
5. UPS stops, the UPS can now be disconnected, as described below:
  - First lock the Normal AC source switch of the MBP to the "0" position (the switch protection frame is able to fit a cable tie or a metallic locker).



- ⚠ After opening the I/O terminal blocks cover of UPS, check if hazardous voltage is no longer present on UPS terminal blocks by using an Voltage Absence Tester.



- Disconnect the MBP conduits, and the MBP detection cable.
- On each MBP power cables just disconnected from the UPS, link the wires together (line and neutral wires linked to ground wire).



- Replace the UPS

⚠ Hazardous voltage and lost load risk: do not manipulate the MBP manual Bypass switch without UPS connected to the MBP power conduits.

### Return to normal operation:

1. Check that the new UPS is correctly connected to the MBP, as described below:

MBP6KiG2:



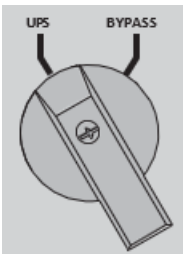
- After opening the UPS I/O terminal blocks cover, connect to UPS the 2 power cables, and the MBP detection cable, of the MBP I/O cord Set
- Connect the I/O cord Set connector to the MBP.

## MBP11KiG2:

- First check that the Normal AC source switch of the MBP is still locked to the "0" position
  - Remove the previously installed safety wires links on both MBP conduits
  - After opening the UPS I/O terminal blocks cover, connect to UPS the MBP conduits, and the MBP detection cable
  - Unlock the Normal AC source switch of the MBP
2. Set the Normal AC source switch of the MBP to the "I" (On) position.
  3. Verify that the UPS is correctly powered (UPS display panel illuminates)
  4. Press the UPS **"ON"** button to start the UPS
  5. Put the UPS in **"Bypass mode"** ("Control → Go to bypass")
  6. Verify that the UPS is on Bypass mode by checking UPS display panel
  7. Verify that the **"UPS mode" green light** of the MBP goes On, indicating that the UPS output power is available on the MBP.

**⚠ Important:** do not continue to next step if the "UPS mode" green light of the MBP is still Off (the load will be lost)

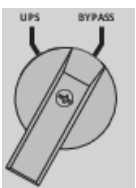
8. Set the **MBP** manual Bypass switch to the **"UPS" position**: the **"Bypass mode" red light** of the MBP goes Off, indicating that the load is now powered by the UPS:
9. Put the UPS in **"normal mode"** (refer to the UPS User Manual)



10. Check that the UPS is in Online mode by checking UPS display panel the load is now protected by the UPS

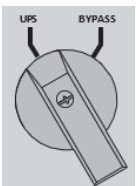
## 7.2 MBP UPS maintenance with HotSwap MBP

**⚠** Go to maintenance Bypass operation (please follow the MANDATORY steps below)



1. Put the UPS in **"Bypass mode"** ("Control → Go to bypass"),
2. Verify that the UPS is on Bypass mode by checking UPS display panel,
3. Set the MBP manual Bypass switch to **"Bypass" position**. The **"Bypass mode" red light** of the MBP goes On, indicating that the load is supplied directly by AC source,
4. Proceed to maintenance operations on UPS.

Return to normal operation:



1. Verify that the UPS is on Bypass mode by checking UPS display panel,
2. Verify that the **"UPS mode" green light** of the MBP is On, indicating that the UPS output power is available on the MBP,

**⚠ Caution:** do not continue to next step if the "UPS mode" green light of the MBP is Off (the load will be lost)

3. Set the MBP manual Bypass switch to the **"UPS" position**: the **"Bypass mode" red light** of the MBP goes Off, indicating that the load is now powered by the UPS,
4. Put the UPS in **"normal mode"**
5. Check that the UPS is in Online mode by checking UPS display panel the load is now protected by the UPS

## 8 MBP Troubleshooting

Not applicable

## 9 MBP Specification and technical characteristics

### 9.1 MBP Electrical input

|                          |                    |
|--------------------------|--------------------|
| <b>Default frequency</b> | 50Hz               |
| <b>Nominal frequency</b> | 50/60Hz            |
| <b>Frequency range</b>   | 40-70Hz            |
| <b>Protective class</b>  | Protective class I |

### 9.2 MBP Electrical input connections

| <b>Catalog Number</b> | <b>Input connection</b> |
|-----------------------|-------------------------|
| MBP6KiG2              | Hardwired               |
| MBP11KiG2             |                         |

### 9.3 MBP Electrical output connections

| <b>Catalog Number</b> | <b>Output connection</b>                                |
|-----------------------|---------------------------------------------------------|
| MBP6KiG2              | 1 x IEC10/16A<br>2 x IEC10/16A & 2x IEC10A<br>Hardwired |
| MBP11KiG2             | 4 x IEC10/16A<br>Hardwired                              |

MBP outlets are connected to UPS primary group outlets

### 9.4 MBP Environmental and safety

MBP is an UPS option. Refer to UPS compliance below :

|                                |                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Standards</b>               | IEC/EN 62040-1 Safety<br>IEC/EN 62040-2 Electromagnetic Compatibility EMC<br>IEC/EN 62040-3 Performance                                                                                                                                                                                                                                                              |
| <b>EMC (Emissions)</b>         | CISPR32 Class A IEC/EN 62040-2 C2<br>IEC/EN 61000-3-12 Harmonics<br>IEC/EN 61000-3-11 Flickers                                                                                                                                                                                                                                                                       |
| <b>EMC (Immunity)</b>          | IEC 61000-4-2, (ESD): 6kV Contact Discharge / 8 kV Air Discharge IEC 61000-4-3, (Radiated field): 10 V/m<br>IEC 61000-4-4, (EFT): 4 kV Power Port / 2 kV Network Port<br>IEC 61000-4-5, (Surges): 2 kV Differential Mode / 4 kV Common Mode / 1 kV Network Port<br>IEC 61000-4-6, (Electromagnetic field): 10 V<br>IEC 61000-4-8, (Conducted magnetic field): 30 A/m |
| <b>UPS enclosure IP rating</b> | IP20                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Earthing system</b>         | This UPS can be connected to TN, TT, IT electrical supply system, same system is supplied to the load.                                                                                                                                                                                                                                                               |

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                 |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| <b>Overvoltage Category</b>    | Category II                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                 |
| <b>Pollution degree</b>        | PD2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                 |
| <b>Operating temperature</b>   | 0 to 40 °C (32 to 104 °F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                 |
| <b>Storage temperature</b>     | 0 to 40°C (32 to 104 °F) with battery<br>-15 to 60°C (-5 to 140 °F) without battery                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                 |
| <b>Transit temperature</b>     | -15°C to 60°C (-5 °F to 140 °F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                 |
| <b>Relative humidity</b>       | 0 to 95 % (without condensation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                 |
| <b>Operating altitude</b>      | Up to 3,000 meters (9,842ft) above sea level (without derating).                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                 |
| <b>Transit altitude</b>        | Up to 10,000 meters (32,808 ft) above sea level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                 |
| <b>Audible noise</b>           | Line mode (load <100%, T<30°C) :<br>11000 VA < 50 dB<br>6000 VA < 45 dB                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                 |
| <b>Standards</b>               | IEC/EN 62040-1 Safety<br>IEC/EN 62040-2 Electromagnetic Compatibility EMC<br>IEC/EN 62040-3 Performance<br>FCC part 15 Class A<br>UL 1778 ENERGY STAR Program Requirements for Uninterruptible Power Supplies (UPSs) Version 2.0<br>CSA-C22.2 No. 107.3                                                                                                                                                                                                                                                                                        |                                                                 |
| <b>EMC (Emissions)</b>         | CISPR32 Class A<br>FCC part 15 Class A<br>IEC/EN 62040-2 C2<br>IEC/EN 61000-3-2 or IEC/EN 61000-3-12 Harmonicas<br>IEC/EN 61000-3-3 or IEC/EN 61000-3-11 Flickers                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |
| <b>EMC (Immunity)</b>          | IEC 61000-2-2, (Low Frequency): 10V, 140-360Hz<br>IEC 61000-4-2, (ESD): 8 kV Contact Discharge / 15 kV Air Discharge<br>IEC 61000-4-3, (Radiated field): 10 V/m<br>IEC 61000-4-4, (EFT): 4 kV Power Port / 2 kV Network Port<br>IEC 61000-4-5, (Surges): 2 kV Differential Mode / 4 kV Common Mode / 1 kV Network Port<br>IEC 61000-4-6, (Electromagnetic field): 10 V<br>IEC 61000-4-8, (Conducted magnetic field): 30 A/m<br>IEC 61000-4-11, (Voltage Dips) Class 2<br>IEC 61000-4-12, (Ring Wave): 2 kV Differential Mode / 2kV Common Mode |                                                                 |
| <b>UPS enclosure IP rating</b> | IP20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                 |
| <b>Earthing system</b>         | This UPS can be connected to TN, TT, IT electrical supply system, same system is supplied to the load.                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                 |
| <b>Overvoltage Category</b>    | Category II                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                 |
| <b>Pollution degree</b>        | PD2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                 |
| <b>Operating temperature</b>   | 0 to 40 °C (32 to 104 °F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                 |
| <b>Operating altitude</b>      | Up to 3,000 meters (9,842ft) above sea level (without derating).                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                 |
| <b>Relative humidity</b>       | 0 to 95 % (without condensation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                 |
| <b>Storage temperature</b>     | 0°C to 40°C (32°F to 104°F) with battery<br>-25°C to 55°C (-13 °F to 131 °F) without battery                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                 |
| <b>Transit altitude</b>        | Up to 10,000 meters (32,808 ft) above sea level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                 |
| <b>Transit temperature</b>     | -25°C to 55°C (-13 °F to 131 °F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                 |
| <b>Audible noise</b>           | Line mode (load <66%, T<30°C) :<br>11000 /8000 VA < 38 dB<br>6000 /5000 VA < 38 dB                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Batt. Mode :<br>11000 /8000 VA < 59 dB<br>6000 /5000 VA < 49 dB |

## 10 MBP Glossary

|                                    |                                                                                                                                                                                   |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Backup time                        | Time during which the load can be supplied by the UPS operating on battery power.                                                                                                 |
| Low-battery warning                | This is a battery-voltage level indicating that battery power is low and that the user must take action before the UPS shuts down.                                                |
| Load                               | Devices or equipment connected to the UPS output.                                                                                                                                 |
| Normal mode<br>(double conversion) | The normal UPS operating mode in which the AC source supplies the UPS which, in turn, provides AC power to the connected loads.<br>(after electronic double conversion).          |
| Normal AC source                   | Normal source of power for the UPS.                                                                                                                                               |
| OVL                                | Overload. When the load exceeds 100% of the maximum load of the UPS.                                                                                                              |
| UPS                                | Uninterruptible Power System.                                                                                                                                                     |
| Bypass AC source                   | Source supplying the bypass line. The equipment can be transferred to the bypass line if an overload occurs on the UPS output, for maintenance or in the event of a malfunction.  |
| Frequency converter                | Operating mode used to convert the AC power frequency between the UPS input and output (50Hz -> 60Hz or 60Hz -> 50Hz).                                                            |
| HE Mode                            | Operating mode by which the load is supplied directly by the AC source if it is within the tolerances defined by the user. This mode reduces the consumption of electrical power. |