



# Wall Mounted External Maintenance Bypass System

Installation and Operation Manual:  
Single and Three Phase Systems



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### Warning



The MBS should only be installed and operated by authorised and trained personnel.

## 01 Introduction

### Installation and Operation Manual

The Maintenance Bypass Switch (MBS) is a wall mounted unit specially designed to allow maintenance and removal of the UPS without disruption of the supply to the protected load.

The MBS can be used to test and commission the UPS system without affecting the protected load. It is fitted with three switches that can be in 2 positions only (**off** (0) and **on** (1)).

Care must always be taken when following the operating instructions in order to prevent any accidental switching during normal and bypass operation.

With the MBS in normal configuration, backup is available from the UPS in the event of a mains supply failure. When in bypass configuration, no backup is available, but the mains supply can remain connected to the UPS if required.

## 02 Installation

Read all warnings before proceeding

Before commencing the installation ensure that the MBS is suitable for the UPS system for which it is to be used. The recommended cable sizes can be found in the UPS user manual.

Mount the MBS securely to an even surface, this can be achieved using the four mounting holes located in the rear of the enclosure, or using the optional wall fixing kit.

Once the MBS is securely mounted, the connections can then be made as described in the next section.

The removable gland plates can be drilled to suit your particular gland requirements (ensure the gland plates are removed before drilling).



### Warnings

The following procedure must be followed exactly. Failure to do so, could lead to the exposure of hazardous voltages and the disruption of protected equipment. It is highly recommended that the following procedure is only carried out by a qualified electrician.

**This equipment must be earthed.**

Hazardous voltages will be present on the terminal block if the UPS or mains supply is switched on. Always ensure that the UPS and mains supply is **off** and isolated before proceeding. (Refer to UPS Operations Manual for correct indications).

### Important:

Ensure all internal factory connections are secure and tight.



### 03

## Connection of the Mains Supply

Feed the mains supply cables through the gland plate and secure, terminate the mains supply cables to the terminals marked “MAINS INPUT” as follows.

Single Phase Supply		Three Phase Supply	
Wire	Terminal	Wire	Terminal
Live (Brown)	L	Phase 1 (Brown)	L1
Neutral (Blue)	N	Phase 2 (Black)	L2
Earth	Earth Stud	Phase 3 (Grey)	L3
		Neutral (Blue)	N
		Earth	Earth Stud

### 04

## Connection of the Input to the UPS

Feed the UPS input cables through the gland plate and secure, terminate the UPS input cables to the terminals marked “UPS INPUT” as follows.

Single Phase Supply		Three Phase Supply	
Wire	Terminal	Wire	Terminal
Live (Brown)	L	Phase 1 (Brown)	L1
Neutral (Blue)	N	Phase 2 (Black)	L2
Earth	Earth Stud	Phase 3 (Grey)	L3
		Neutral (Blue)	N
		Earth	Earth Stud

### 05

## Connection of the Output from the UPS

Feed the UPS output cables through the gland plate and secure, terminate the UPS output cables to terminals marked “UPS OUTPUT” as follows.

Single Phase Supply		Three Phase Supply	
Wire	Terminal	Wire	Terminal
Live (Brown)	L	Phase 1 (Brown)	L1
Neutral (Blue)	N	Phase 2 (Black)	L2
Earth	Earth Stud	Phase 3 (Grey)	L3
		Neutral (Blue)	N
		Earth	Earth Stud

### 06

## Connection of the Protected Equipment

Feed the protected equipment cables through the gland plate and secure, terminate marked “LOAD OUTPUT” as follows.

Single Phase Supply		Three Phase Supply	
Wire	Terminal	Wire	Terminal
Live (Brown)	L	Phase 1 (Brown)	L1
Neutral (Blue)	N	Phase 2 (Black)	L2
Earth	Earth Stud	Phase 3 (Grey)	L3
		Neutral (Blue)	N
		Earth	Earth Stud

## 07

### Connection of the Auxiliary Contacts

(Optional)

The auxiliary contacts are only used if required. They allow the position of the system bypass switch and output switch to be monitored as follows:

Auxiliary contacts for bypass panels rated between 32A and 160A:

Auxiliary Contact Terminals		System Bypass Switch Position
1 & 2	Contact Open	Off (0)
3 & 4	Contact Closed	Off (0)
1 & 2	Contact Closed	On (1)
3 & 4	Contact Open	On (1)

Auxiliary Contact Terminals		Output Switch Position
5 & 6	Contact Open	Off (0)
7 & 8	Contact Closed	Off (0)
5 & 6	Contact Closed	On (1)
7 & 8	Contact Open	On (1)

Auxiliary contacts for bypass panels rated between 200A and 630A:

Auxiliary Contact Terminals		System Bypass Switch Position
1 & 2	Contact Open	Off (0)
2 & 3	Contact Closed	Off (0)
1 & 2	Contact Closed	On (1)
2 & 3	Contact Open	On (1)

Auxiliary Contact Terminals		Output Switch Position
1 & 2	Contact Open	Off (0)
2 & 3	Contact Closed	Off (0)
1 & 2	Contact Closed	On (1)
2 & 3	Contact Open	On (1)

## 08

### Initial Switch On

Before the mains supply is applied to the MBS, refit all of the covers that were removed during installation ensuring the earth connections are secure. All three switches should be in the **off** (0) position.

With the supply available to the MBS, closing the System Bypass switch to the **on** (1) position will then energise the load circuits downstream of the panel.

Turning the UPS Input switch to the **on** (1) position will provide power to the UPS. Start the UPS and confirm that the UPS operates correctly as described in the UPS user Manual.

Place the UPS into bypass mode by referring to the UPS user manual if necessary.

Close the UPS Output switch to the **on** (1) position, and then open the System Bypass switch to the **off** (0) position on the MBS.

Transfer the UPS from bypass to online mode. The UPS is now supporting the protected load, and the system is in normal operating mode.





## 09 Maintenance Bypass Switch Operation

### 9.1 Switching to Bypass Operation

(for UPS maintenance and testing only)

**Note:** Check that the UPS is working normally and that it is not working in battery operation mode (refer to UPS user manual). If these conditions are not met, disruption or damage may occur to the UPS or protected load if the MBS is operated.

- a) Place the UPS to bypass mode by referring to the UPS user manual if necessary.
- b) Turn the System Bypass switch to the **on** (1) position.
- c) Turn the UPS Output switch to the **off** (0) position.

The load is now supplied directly from the mains supply and the UPS still has mains supply connected. The UPS may now be switched off or tested (refer to UPS user manual) without disrupting the load.

### 9.2 Switching to Bypass Operations

(for UPS maintenance and complete isolation only)

**Note:** Check that the UPS is working normally and that it is not working in battery operation mode (refer to UPS user manual). If these conditions are not met, disruption or damage may occur to the UPS or protected load if the MBS is operated.

- a) Place the UPS to bypass mode by referring to the UPS user manual if necessary.
- b) Turn the System Bypass switch to the **on** (1) position.
- c) Turn the UPS Output switch to the **off** (0) position.
- d) Switch off the UPS by referring to the UPS user manual (whilst ensuring the batteries are also isolated).
- e) Turn the UPS Input switch to the **off** (0) position.

The load is now supplied directly from the mains supply and the mains supply to the UPS is disconnected. It is now safe to disconnect the UPS system.

### 9.3 Transferring from Maintenance Bypass to UPS Operation

This operation assumes that the UPS has been correctly installed, with the System Bypass switch in the **on** (1) position, and that both the UPS Input and UPS Output switches are in the **off** (0) position.

- a) Turn the UPS Input switch to the **on** (1) position, to provide power to the UPS.
- b) Start the UPS and confirm that the UPS operates correctly as described in its user manual.
- c) Place the UPS into bypass mode by referring to the UPS user manual if necessary.
- d) Turn UPS Output switch to the **on** (1) position.
- e) Turn the System Bypass switch on the MBS to the **off** (0) position.
- f) Transfer the UPS from bypass to online mode, referring to the UPS user manual if necessary.



### Warning

Hazardous voltages are always present with the MBS, unless completely isolated from the UPS and mains supply.