

RBS 700VA - 10KVA HARDWIRED  
& RBS 015 SERIES MAINTENANCE  
BYPASS SWITCH

1. INTRODUCTION .....	3
2. HARDWIRED VERSION INSTALLATION.....	3
2.1 Connection of the Mains Supply.....	3
2.2 Connection of the Input to the UPS.....	3
2.3 Connection of the Output from the UPS.....	4
2.4 Connection of the Protected Equipment.....	4
2.5 Connection of the Auxiliary Contacts (Optional) .....	4
2.6 Initial switch on .....	4
3. RBS 015 INSTALLATION (PLUG & PLAY).....	5
3.1 Connection of the Mains Supply.....	5
3.2 Connection of the Input to the UPS.....	5
3.3 Connection of the Output from the UPS.....	5
3.4 Connection of the Protected equipment .....	5
3.5 Connection of the Auxiliary Contacts (Optional) .....	5
3.6 Initial switch on .....	5
4. MAINTENANCE BYPASS SWITCH OPERATION.....	6
4.1 Switching to Bypass Operation for UPS maintenance and testing.....	6
4.2 Switching to Bypass Operation for UPS maintenance and complete isolation ( <i>not applicable for the RBS015</i> ).....	6
4.3 Disconnection of the UPS .....	6
4.4 Reconnection of the UPS.....	7
4.5 Switching back to Normal Operation .....	7
4.6 Automatically Switching To Bypass (Auto models only) .....	7
4.7 TVSS Indicators (TVSS models only).....	8
APPENDIX 1. 700VA - 10kVA HARDWIRED DIAGRAM .....	9
APPENDIX 2. RBS015 DIAGRAM.....	10

## 1. INTRODUCTION

The Maintenance Bypass Switch (*RBS*) is a 19inch rack-mounted unit specially designed to allow maintenance and removal of the UPS without any disruption of the supply to the protected equipment (*i.e. the load*).

Models with an 'A' suffix include automatic transfer of the load to bypass in the event of UPS failure.

Models with a 'T' suffix include transient voltage surge suppression to protect the load against mains borne voltage/current spikes.

## 2. HARDWIRED VERSION INSTALLATION

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

**THIS EQUIPMENT MUST BE EARTHED.**

Before commencing the installation ensure that the RBS is suitable for the UPS system for which it is to be used, the connection cable sizes can be found in the UPS user manual. Remove the terminal cover from the rear of the RBS, any covers are secured by several retaining screws and are connected to the unit via an earth connection, this earth connection may be removed temporarily during the installation. Once the RBS is securely fitted into the rack enclosure the connections can be made as described in the following section: -

### **WARNING!**

Hazardous voltages will be present on any terminals if the UPS or mains supply is switched on. Always ensure that the mains supply and UPS are switched off and isolated prior to touching any terminals. Use a meter to confirm that no voltages are present.

### 2.1 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 "**SUPPLY IN**" as follows: -

Supply Input Wire	Terminal Location
Live (Brown)	Terminal Marked T1
Neutral (Blue)	Terminal Marked T2
Earth (GN/YW)	Terminal Marked T3

Ensure that all terminals and glands are tight

### 2.2 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 IN**" as follows: -

UPS Input Wire	Terminal Location
Live (Brown)	Terminal Marked T4
Neutral (Blue)	Terminal Marked T5
Earth (GN/YW)	Terminal Marked T6

Ensure that all terminals and glands are tight

### 2.3 Connection of the Output from the UPS

Feed the UPS output cables through the gland plate and secure, terminate the UPS output cables to the terminals marked “**UPS OUT**” as follows: -

UPS Output Wire	Terminal Location
Live (Brown)	Terminal Marked T7
Neutral (Blue)	Terminal Marked T8

Ensure that all terminals and glands are tight

### 2.4 Connection of the Protected Equipment

Feed the protected equipment cables through the gland plate and secure, terminate the protected equipment cables to the terminals marked “**SUPPLY TO LOAD**” as follows: -

Protected Equipment Wire	Terminal Location
Live (Brown)	Terminal Marked T9
Neutral (Blue)	Terminal Marked T10
Earth (GN/YW)	Terminal Marked T11

Ensure that all terminals and glands are tight

### 2.5 Connection of the Auxiliary Contacts (Optional)

The auxiliary contacts are only to be used if required, they allow the position of the bypass switch to be monitored as follows: -

Switch Position	Contact Status
Normal	Open
Bypass & UPS	Closed
Bypass	Closed
Contact Rating	20A @ 230Vac

### 2.6 Initial switch on

Before the mains supply is applied to the RBS, refit all of the covers that were removed during installation, not forgetting the earth connections. With the RBS switch in the “**NORMAL**” position, switch on the supply. Start the UPS and confirm that the UPS operates correctly as described in its User Manual. The unit is now installed.

### 3. RBS 015 INSTALLATION (PLUG & PLAY)

**WARNING:** - The following procedure must be followed exactly. Failure to do so, could lead to exposure to hazardous voltages and disruption of the supply to the protected equipment.

Before commencing the installation ensure that the RBS is suitable for the UPS system for which it is to be used, the connection cable sizes can be found in the UPS user manual. Once the RBS is securely fitted into the rack enclosure the connections can be made as described in the following section: -

#### 3.1 Connection of the Mains Supply

Plug the mains supply plug marked as “**AC INPUT**” into a suitable mains supply socket that has a minimum rating of 10A.

#### 3.2 Connection of the Input to the UPS

Connect the UPS input to the Bypass socket marked “**UPS INPUT**”, using an IEC male-to-female lead.

#### 3.3 Connection of the Output from the UPS

Connect the UPS output to the Bypass socket marked “**UPS OUTPUT**”, using an IEC male-to-female lead.

#### 3.4 Connection of the Protected equipment

Connect the equipment to be protected to the Bypass socket(s) marked “**LOAD**”.

#### 3.5 Connection of the Auxiliary Contacts (Optional)

The auxiliary contacts are only to be used if required, they allow the position of the bypass switch to be monitored as follows: -

Switch Position	Contact Status
Normal	Open
Bypass	Closed
Contact Rating	10A @ 230Vac

#### 3.6 Initial switch on

Before the mains supply is applied to the RBS, confirm that all connections are correct. With the RBS switch in the “**NORMAL**” position, switch on the supply. Start the UPS and confirm that the UPS operates correctly as described in its User Manual. The unit is now installed.

## 4. MAINTENANCE BYPASS SWITCH OPERATION

**Warning! Always allow a 20 second break between switching positions**

### NOTE

For the load to be fully protected by the UPS, the RBS must be switched to the “**NORMAL**” position and the UPS must be completely switched on and in normal operation (*refer to the UPS user manual*).

### 4.1 Switching to Bypass Operation for UPS maintenance and testing.

**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 even damage can occur to the UPS or protected equipment if the switch is operated.

- ◆ Turn the switch to the position marked as “**BYPASS & UPS**” (*for the hardwired version*) or “**BYPASS**” (*for the RBS015 version*). 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.

### 4.2 Switching to Bypass Operation for UPS maintenance and complete isolation (*not applicable for the RBS015*)

**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 even damage can occur to the UPS or protected equipment if the switch is operated.

- ◆ Turn the switch to the “**BYPASS**” position. The load is now supplied directly from the mains supply and the mains supply to the UPS is disconnected.
- ◆ The UPS may now be switched off without disrupting the load.

### 4.3 Disconnection of the UPS

**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 even damage can occur to the UPS or protected equipment if the switch is operated.

- ◆ Turn the switch to the position marked as “**BYPASS & UPS**” (*for the hardwired version*) or “**BYPASS**” (*for the RBS015 version*). The load is now supplied directly from the mains supply but the UPS still has mains supply connected.
- ◆ Switch the UPS off completely following the UPS User Manual (*ensuring the batteries are also isolated*).
- ◆ For the hardwired version turn the switch to the “**BYPASS**” position. The load is still supplied directly from the mains supply but the mains supply to the UPS is disconnected.

### WARNING

Hazardous voltages are always present within the RBS, unless completely isolated from the UPS and Mains Supply.

- ◆ Lock the switch in position if necessary (*if lock is fitted*).
- ◆ Remove the terminal cover from the rear of the RBS (*not applicable to RBS015*).
- ◆ For the hardwired version, disconnect the cables from the terminals marked UPS IN and UPS OUT, for the RBS015 version disconnect both UPS Input and Output IEC cables.
- ◆ The UPS can now be removed for maintenance, as the load will continue to be supplied through the RBS.
- ◆ Replace the terminal cover of the RBS (*if applicable*).

#### 4.4 Reconnection of the UPS

### **WARNING**

Hazardous voltages are always present within the RBS, unless completely isolated from the UPS and Mains Supply.

- ◆ To reconnect the UPS, follow section 2 (2.2 & 2.3) for the hardwired version or for the RBS015 follow section 3 (3.2 & 3.3) found earlier within this manual.
- ◆ Once all connections have been made replace all covers (*if necessary*) and refer to section 4.5.

#### 4.5 Switching back to Normal Operation

### **Warning!**

**Always allow a 20 second break between switching positions**

- ◆ For the hardwired version turn the switch to the “**BYPASS & UPS**” position. The UPS now has mains supply available. The load is still supplied directly from the mains supply.
- ◆ Switch on the UPS ensuring correct operation.

**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 even damage can occur to the UPS or protected equipment if the switch is operated.

- ◆ Turn the bypass switch to the “**NORMAL**” position.
- ◆ The load is now protected by the UPS.

#### 4.6 Automatically Switching To Bypass (Auto models only)

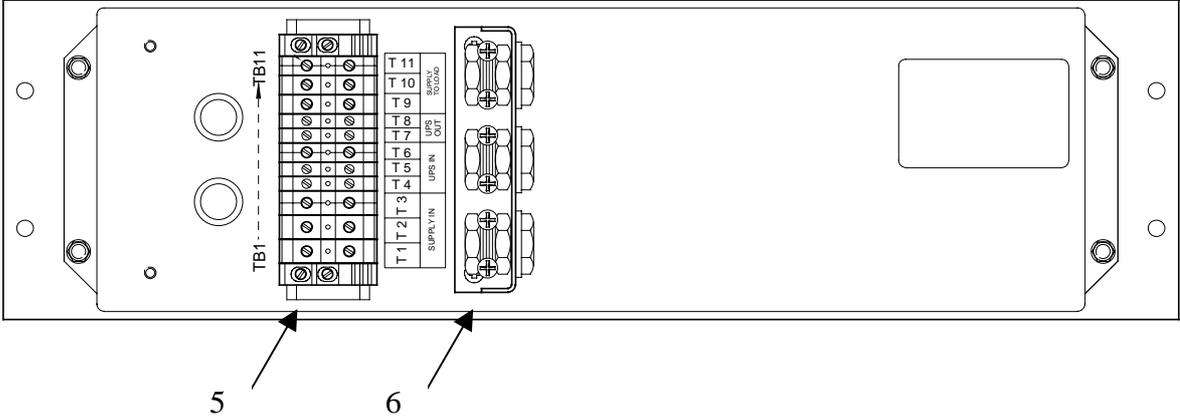
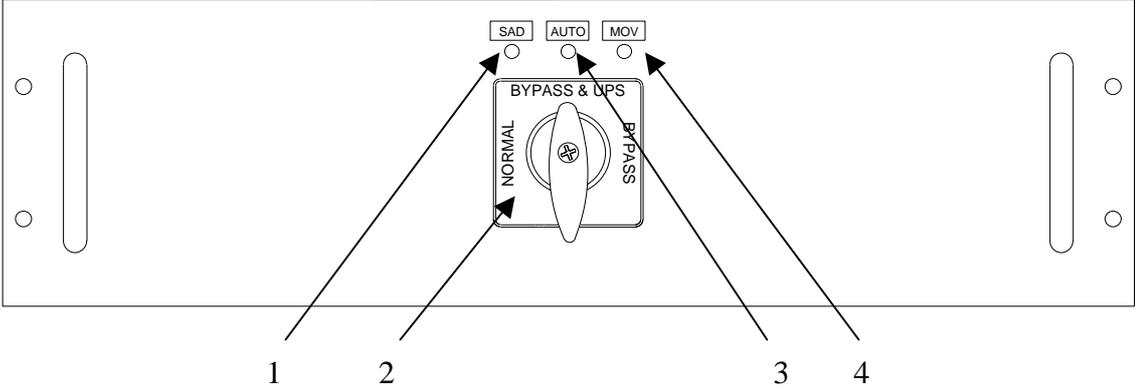
If the bypass senses that the UPS output has failed, the bypass will automatically transfer the load to the mains supply and the AUTO BYPASS NEON will light red. The manual switch will not move. In such a scenario: -

- ◆ Turn the switch to the position marked as “**BYPASS & UPS**” (*for the hardwired version*) or “**BYPASS**” (*for the RBS015 version*).
- ◆ Investigate the UPS alarm/fault condition.

#### **4.7 TVSS Indicators (TVSS models only)**

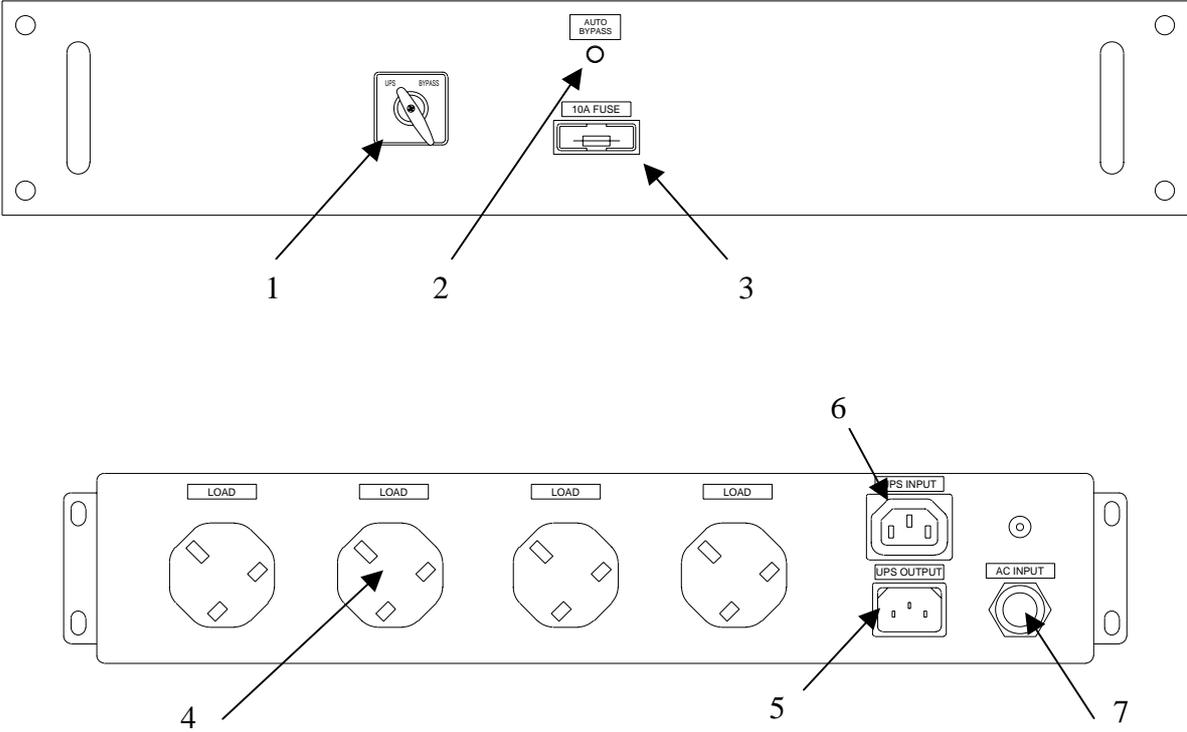
Models with TVSS fitted have neon indicators, which show the level of protection being given. Under normal circumstances no neon's should be lit. If one or more of the neon's is glowing this indicates that the TVSS has degraded due to an excessive transient or transients. This does not mean that your equipment is unprotected but that the level of protection has been reduced and that the TVSS device requires service or replacement.

# APPENDIX 1. 700VA - 10kVA HARDWIRED DIAGRAM



1. SAD status indicator (TVSS models only).
2. 3-Position Rotary Switch
3. Automatic Bypass Neon (if fitted)
4. MOV status indicator (TVSS models only).
5. Terminal blocks.
6. Cable glands.

# APPENDIX 2. RBS015 DIAGRAM



1. 2 Position Rotary Switch
2. Automatic Bypass Neon (if fitted)
3. AC Input Fuse + Spare
4. Output Load Sockets
5. UPS Output Socket
6. UPS Input Socket
7. AC Inlet