



by **Schneider** Electric

# **Business Appliance & Lighting UPS**

## **BI1000I**

### **Installation Guide and User's Manual**

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Thank you for purchasing APC's Business Appliance & Lighting UPS (BAL). Please fill out the enclosed Warranty Registration Card, or register your purchase on-line at: [www.apc.com/support](http://www.apc.com/support).

## Overview

APC's BAL UPS (Figure 1) is designed for years of trouble-free use. The BAL UPS is a sinewave back-up power supply intended to serve house loads. It is rated for 1000 VA/660W at 230 Vac, 50-Hz, and operates on a wide range of input voltages (100 - 270V). If the input voltage goes out of range (less than 100V or more than 270V), the utility is isolated and the UPS supplies power to the load from an externally connected battery (may be purchased from APC, or from the supplier of your choice). The UPS can serve inductive loads (fluorescent lamps, ceiling and table fans), resistive loads (incandescent lamps), and switched mode power supply (SMPS) loads (television).

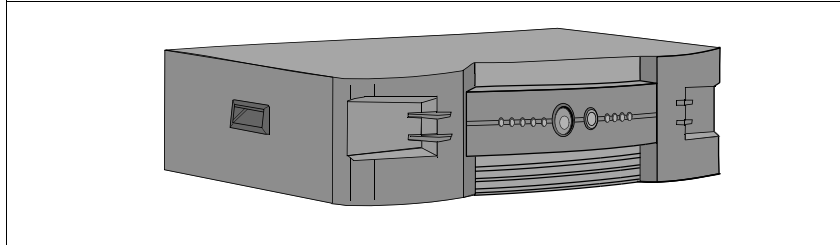


Figure 1. APC BAL UPS

## Checklist:

Depending on what the customer has ordered, ensure the following items have been delivered:

- BAL UPS
- Wiring Kit

## Section 1. Unpacking/Inspection of BAL UPS (at reseller location)

**! Warning:** The BAL UPS weighs 15 kg. Please handle carefully.

Inspect the shipping containers for signs of obvious damage. If damage to either shipping container is extensive, notify the carrier and return the unit to the factory. If there are no apparent signs of damage, carefully open the container, and remove the packing materials (do not discard). Inspect for dents, scratches, warpage of the top cover, or other signs of damage. If unit is damaged, please notify the factory and obtain a Return Material Authorization number and return the unit as/if instructed. If there are no obvious signs of damage, repackage the unit for shipment to the customer using the materials already removed from the shipping container. Ship or otherwise deliver the unit to the customer location.

## Section 2. Unpacking/Inspection of BAL UPS (at customer location)

**Note:** The BAL UPS Assembly is shipped with two (one male and one female) IEC connectors and battery assembly wiring for use in installing wiring to/from the BAL UPS.

Inspect the shipping containers for signs of obvious damage. If damage to either shipping container is extensive, notify the carrier and return the unit to the factory. If there are no apparent signs of damage to the shipping container, carefully open the container, and remove the packing materials (do not discard).

**! Warning:** The BAL UPS weighs 15 kg. Please handle carefully.

Remove the item from the shipping container and inspect for: dents, scratches, warpage of the top cover, or other signs of damage. If unit is damaged, please notify the factory and obtain a Return Material Authorization number and return the unit as/if instructed.

## Section 3. Installation

### BAL UPS Placement

**Note:** Once the unit has been completely installed, it is not desirable to move it.

**Location selection** - Ensure the area where the unit is to be placed is not in direct sunlight (surfaces may become hot). Further ensure the unit is placed in a dry area away from sources of liquids, and that the vents on each side have at least 15 cm (6 inches) of unobstructed clearance.

### Battery Connection

Connect the red battery terminal lead (protrudes from the lid) to the positive (+) terminal of the first battery and connect the black battery terminal lead (protrudes from the lid) to the negative (-) terminal of second battery. connect remain two battery terminals using black cable.

### Install BAL UPS

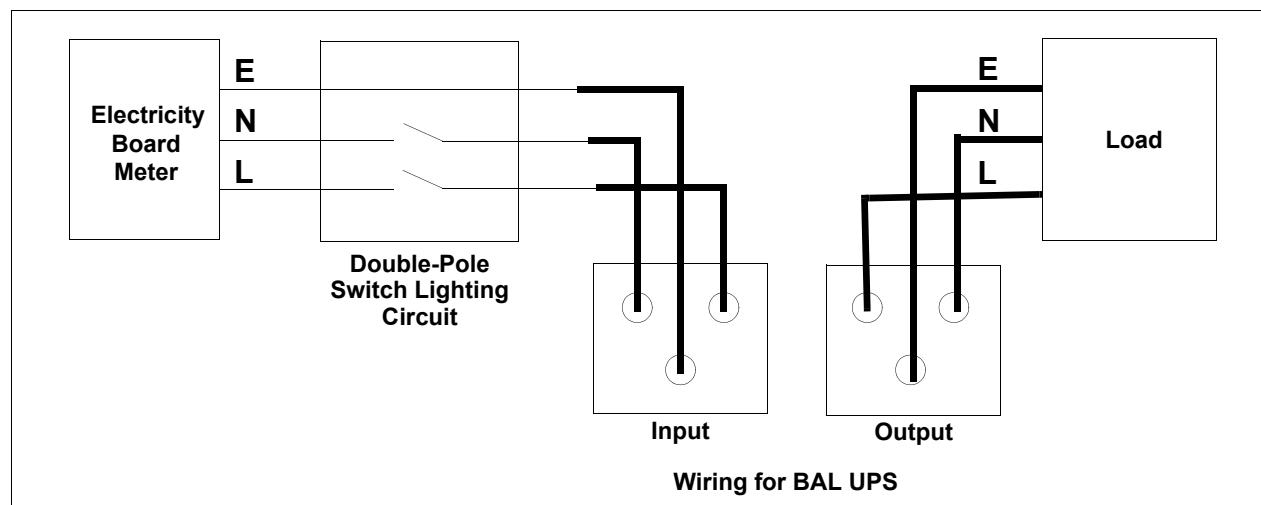
**Caution:** Installation of the BAL UPS must be performed by a licensed and qualified electrician. Failure to comply may result in equipment damage, and may also void the Warranty.

Figure 2 shows a typical BAL wiring scenario after installation of the BAL UPS Assembly wiring.

**Note:** The BAL UPS can serve inductive loads (fluorescent lamps, ceiling and table fans), resistive loads (incandescent lamps), and SMPS loads (television).

**Caution:** Connecting the BAL UPS to a branch circuit that exceeds 16 amps may result in equipment damage.

**Note:** BAL wiring to power the desired loads should be routed and connected to a single branch circuit providing a maximum of 16 amps to the circuit, Wiring must be in accordance with local electric codes and standards. Connected loads must not exceed 660 watts when the BAL UPS is On Battery.



**Figure 2. Typical Home/Office Wiring After BAL UPS Installation**

Connect one end of the electrical cable from the double-pole switch lighting circuit in accordance with local electric codes and standards. Connect the other end of the electrical cable to the provided IEC connector, and then to the rear panel **Input** connector on the BAL UPS Assembly (Figures 2 and 3).

Connect one end of the electrical cable from the load in accordance with local electric codes and standards. Connect the other end of the electrical cable to the provided IEC connector, and then to the rear panel **Output** connector on the BAL UPS Assembly (Figures 2 and 3).

Connect the battery wiring harness from the battery to the rear panel input connector of the BAL UPS (Figure 3) marked **24V Battery**. Once the Home/Office wiring is complete and the batteries are connected to the BAL UPS Assembly, turn on power at the Electricity Board Meter then at the Double-Pole Switch Lighting Circuit. The BAL UPS will automatically turn on.

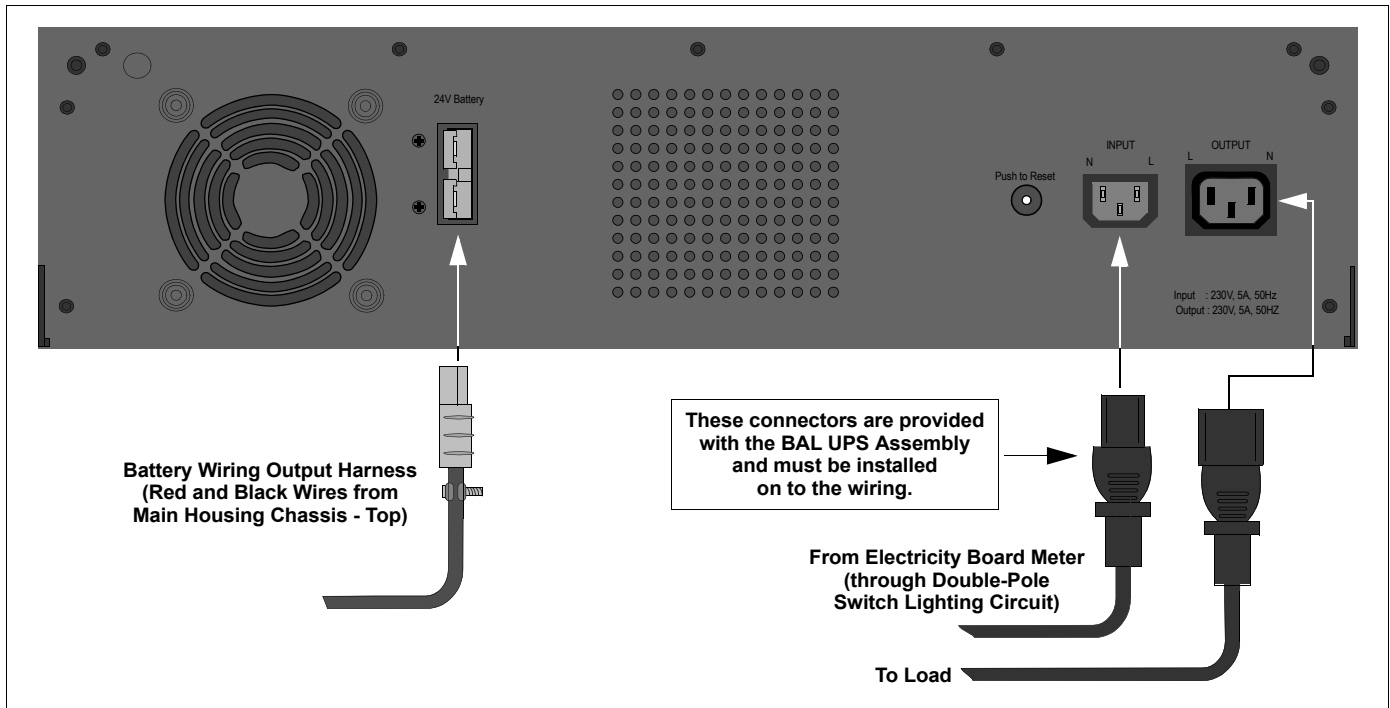


Figure 3. BAL UPS Connections

## Section 4. Controls and Indicators

Please review this section thoroughly before applying power to the **BAL UPS**.

**BAL UPS Controls** - Controls provided on the BAL UPS consist of the holiday mode switch marked **AWAY/HOME**, and the **Test/Mute** switch, as well as a rear panel **Push to Reset** circuit breaker, and are defined in the following:

**AWAY/HOME** - (also known as the holiday mode switch) - In the **HOME** position, this two-position rocker switch (Figure 4) sets the BAL UPS so that it will switch to battery output when there is a utility power outage.

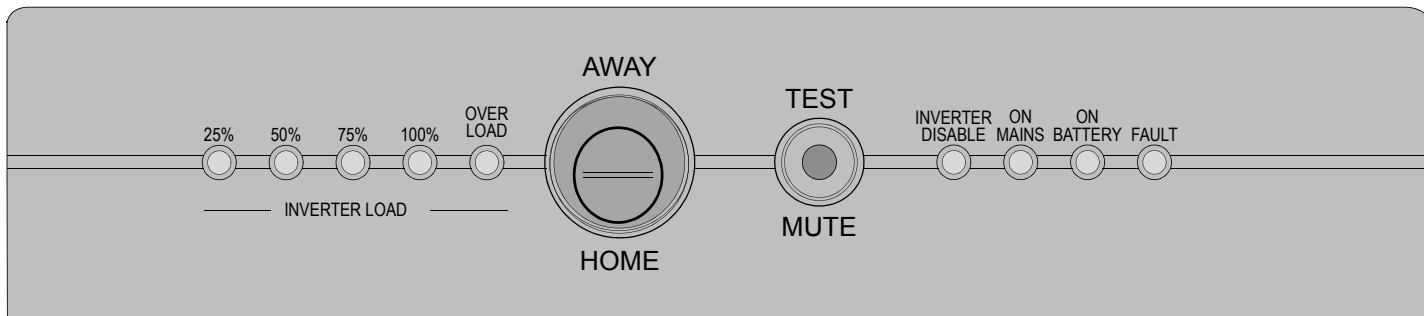
In the **AWAY** position, the **BAL UPS** goes into standby mode and will not switch to battery power in the event of a power outage. This is to conserve the batteries. However, in this position, the **BAL UPS** will charge the batteries until a utility power failure occurs.

**TEST/MUTE** - In **TEST** mode, when **ON MAINS LED** is lit, on pressing this push button, the unit will do self test to determine the state of the system. During On Battery self test it will also show the load status which can be used to find out the load capacity. In the **MUTE** position (push in for 5 seconds), this push button switch silences the low battery buzzer.

**Circuit Breaker Switch** (Rear Panel) - When in **ON MAINS** mode, if the system draws more than 10A, circuit breaker will trip. To reset the circuit breaker switch, push the switch fully inward.

**BAL UPS Indicators** - The **BAL UPS** provides light emitting diode (LED) indicators (Figure 4) to show the operational condition of the **BAL UPS** and batteries. Indicators consist of **Inverter Load Status (25%, 50%, 75%, 100%, and OVER LOAD)**. Other indicators consist of: **INVERTER DISABLE, ON MAINS, ON BATTERY, and FAULT**). Using Table 1, determine the condition of the **BAL UPS** and battery.

**Cold Boot** - To turn on the **BAL UPS** on **Battery Mode**, keep **AWAY/HOME** switch in **HOME** mode and press the **Test-Mute** button and hold it for 2-3 seconds.



**Figure 4. BAL UPS Front Panel Controls and Indicators**

**Table 1. BAL UPS Indicators**

Mode	On Mains (green)	On Battery (yellow)	Fault (red)	INV Disable (red)	Buzzer	Description
ON LINE	On	Off	Off	Off	Off	The unit is ON-LINE.
ON LINE SELF TEST	Flashing	Off	Off	Off	Off	The unit is in ON-LINE Self-Test mode.
ON BATTERY SELF TEST	Flashing	On	Off	Off	Off	The unit is in ON-BATTERY Self-Test mode, and the load is less than 25%.
ON BATTERY	Off	On	Off	Off		The unit is in ON-BATTERY mode, and the load is less than 25%.
BATTERY DISCONNECTED	On	Off	Flashing	Off	Chirp every 2 seconds	The unit is ON-LINE mode; battery is disconnected.
Short Circuit (heavy overload)	Off	Off	On	Off	Continuously On	The unit is in FAULT state, due to short circuit fault.
ON BATTERY Low Battery Warning	Off	On	Off	Off	Constant Beeping, Can be muted through front panel TEST/MUTE push button.	

**Table 2. Load Indications**

	25%	50%	75%	100%	Overload	Buzzer	Description
<b>Power Meter</b>	on	off	off	off	off	off	The unit is in ON-BATTERY mode, and the load is less than 25%.
<b>Power Meter</b>	on	on	off	off	off	off	The unit is in ON-BATTERY mode, and the load is between 25% and 50%.
<b>Power Meter</b>	on	on	on	off	off	off	The unit is in ON-BATTERY mode, and the load is between 50% and 75%.
<b>Power Meter</b>	on	on	on	on	off	off	The unit is in ON BATTERY mode; the load is between 75% and the overload limit.

**NOTE:** In the case of a sustained overload, the **BAL UPS** will be turned off automatically after one minute, and will wait in the fault state for a minute. After that, it will restart again. If the overload still persists, the **BAL UPS** will be turned off again after one minute, and will wait in fault state for one minute and restart again. In the same way, it will try for three restarts. If the overload still persists, it will stay in fault state permanently until the unit is restarted with push button. If the time interval between two consecutive overloads is more than 5 minutes, then the latest overload is considered as a fresh overload and three restart cycle will begin again.

## Section 5. Troubleshooting

**Note:** If the BAL UPS causes interference with a television while **ON-BATTERY**, move the television at least 3 feet away from the **BAL UPS**.

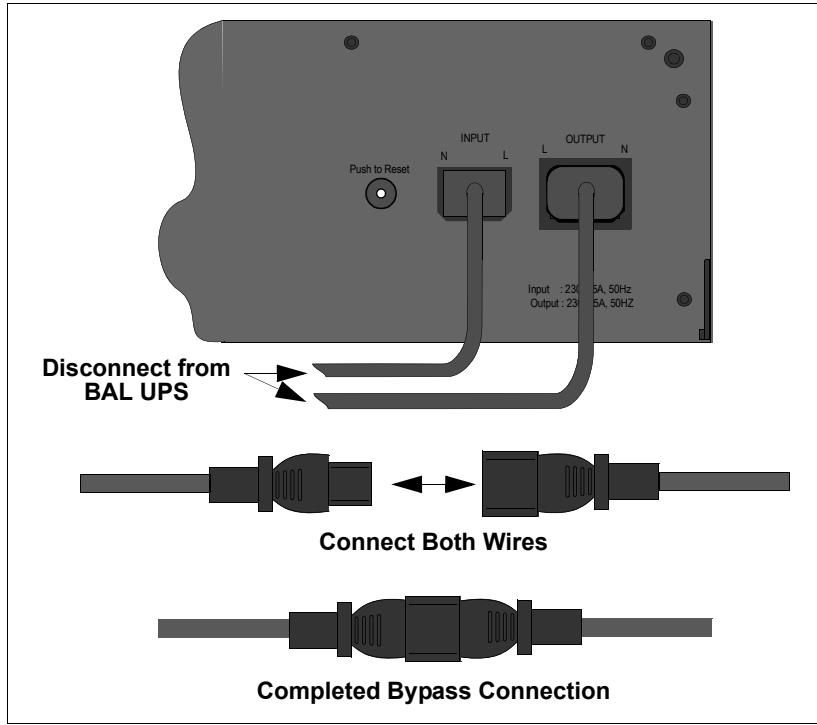
Use the information provided in Tables 1, 2, and 3 to diagnose **BAL UPS** problems. If the problem cannot be resolved using the information provided in this manual, contact APC Technical Support.

**Table 3. BAL UPS Troubleshooting**

<b>Problem</b>	<b>Cause</b>	<b>Corrective Action</b>
<b>BAL UPS</b> fails to operate when mains power is turned on, or during a utility power failure.	Disconnected battery.	Ensure batteries are connected as defined in this manual.
	Power is off at the Mains.	Turn on power at the Mains.
	<b>BAL UPS HOME/AWAY</b> switch in the <b>AWAY</b> position.	Set switch to the <b>BAL</b> position.
	Dead batteries.	<b>BAL UPS</b> failed to charge batteries, or batteries were allowed to completely discharge. Replace batteries. If replacing the batteries does not fix the problem, contact APC Technical Support.
	<b>BAL UPS</b> rear panel <b>Push to Reset</b> circuit breaker has tripped.	Reset the circuit breaker by pushing it fully inward until it stops; release the circuit breaker.
<b>BAL UPS</b> faults.	Improper wiring installation or loose connection.	Ensure wiring is as described earlier in this manual, and that all connections are secure.
	<b>BAL UPS</b> drops the load.	<b>BAL UPS</b> may have an internal failure. If this happens, the unit can be disconnected from the mains by completion of a Manual Bypass (see Manual Bypass).
	<b>BAL UPS</b> is overloaded.	Turn off some loads connected to the <b>BAL UPS</b> until the <b>OVER LOAD LED</b> is no longer lit

**Manual Bypass** - In the event of **BAL UPS** failure or dead battery condition, the **BAL UPS** can be disconnected from the mains and power restored to the circuit by completing a Manual Bypass (Figure 6) of the **BAL UPS**, as follows:

Remove the Wiring Management Kit from the **BAL UPS**. Disconnect all wires connected at the **BAL UPS** rear panel. Connect the wire from the **Input** socket to the wire from the **Output** socket.



**Figure 5. BAL UPS Bypass Connection**

**Preventive Maintenance** - Preventive maintenance consists of inspecting the batteries for cracks and/or leakage, and checking battery fluid levels and filling the batteries every 90 days.



## Specifications

**Table 4. APC Business Appliance & Lighting UPS Technical Specifications**

	<b>Item</b>	<b>Specification</b>
<b>Input Characteristics</b>	Nominal Voltage	230 V
	Rated Voltage	230 V
	Frequency	47-53 Hz
	Nominal Rated Current	4.35 A
	Input Circuit Breaker Rating	10 A
	Input Voltage Window for Utility Operation	100 - 270 VAC
<b>Output Characteristics</b>	Voltage (ON MAINS)	100 - 270 VAC
	Voltage (ON BATTERY)	180 - 250 VAC
	Rated VA	1000 VA *
	Rated Watts	660 W *
	Overload Indicated ON BATTERY	>100%
	Shutdown due to OVERLOAD	> 100% after 60 seconds (see Table 1 and following note)
	Frequency (ON BATTERY)	50 Hz +/- 1%
<b>Surge Protection</b>	Built-in Surge Protection	Protects the load from surges and spikes
<b>Environmental</b>	Ambient Operating Temperature	0-45 degrees C
	Humidity	95% Relative humidity, non-condensing
	Altitude	3000 m
<b>Physical</b>	Input Line	IEC socket
	Outlet Receptacles	IEC socket
	Dimensions - Unit (h) x (w) x (d)	UPS: 13.0 x 50.6 x 29.3 cm
	Weight	UPS : 14 kg
	Shipping Weight	UPS : 15 kg

\* Rated load is defined at 230VAC.

### Contact Information

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