### 7.2 Mechanical

| Model | W x H x L(mm) | Weight (kG) | Remark |
|---|---|---|---|
| UPS-RM-2KVA-115V | 440 x 90 x400 | 12.1 | 4 pcs internal battery |

### 7.3 Environmental

| Item | Normal range |
|---|---|
| Ambient temperature | -10C~ +40C |
| Environment humidity | 0~97%, non condensing |
| Altitude | <1000m: No derating<br>Over 1000m: 1% derating for every 100m rise |
| Storage temperature | -15C~+45C |

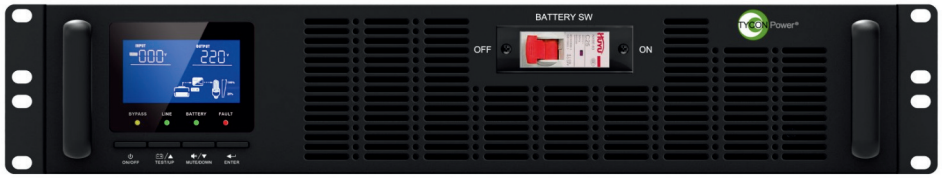
### 7.4 EMC & Safety Regulation

| Item | Standard | Level |
|---|---|---|
| ESD | IEC61000-4-2 | LEVEL4 |
| RS | IEC61000-4-3 | LEVEL3 |
| EFT | IEC61000-4-4 | LEVEL4 |
| SURGE | IEC61000-4-5 | LEVEL4 |
| Safety | IEC62040-1 | |



TYCON Power®

# 115VAC 2KVA 2U Online UPS




Thank you for choosing Tycon® UPS products!

Our double conversion online UPS, powered by DSP digital control technology and high frequency PWM inverter technology, produces clean and stable power. These units provide comprehensive protection for mission critical equipment from data loss or hardware damage, providing clean backup power during power blackouts, surges, or other power quality issues.

Please read this manual carefully and thoroughly before installing or operating the UPS.

## USER MANUAL

## UPS-RM-2KVA-115V

www.tyconsystems.com

# Chapter 7 - Specifications

## 7.1 Specification Table

| Model | | UPS-RM-2KVA-115V |
|---|---|---|
| Rated power | | 2000VA/1800W |
| AC Input | Input system | Single phase (L/N+PE) |
| | Nominal voltage | 100/110/115/120/125VAC |
| | Frequency | 50/60Hz |
| | Voltage range | 55-145VAC ± 3VAC |
| | Frequency range | 40~70 ± 0.5Hz |
| | Input power factor | >0.99 |
| | Bypass voltage range | 80~140VAC × (1±3%) |
| Battery Input | Nominal voltage | 48VDC |
| | Internal Battery Capacity | 40 Ah, 48VDC LiFePO4 Lithium |
| | Backup time | 1800W Load = 12 mins<br>1000W Load = 22 mins<br>500W Load = 43 mins<br>250W Load = 86 mins<br>100W Load = 1hr 36mins |
| | Charge time | Charge to 90% battery capacity in 5 hours |





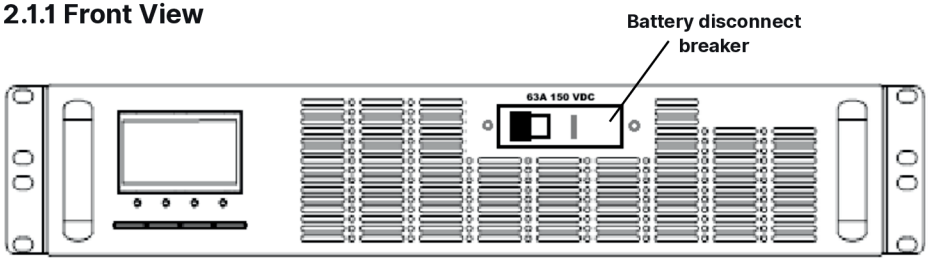
# Chapter 2 - Product Introduction

## 2.1 Product Overview

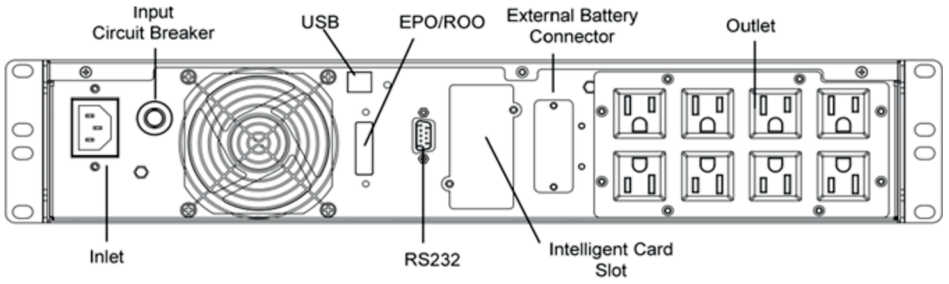
The Tycon UPS-RM-2KVA-115V Uninterruptible Power Supply (UPS) is a next-generation solution that integrates advanced digital control technology with a double-conversion power topology. Designed for high efficiency and reliability, it operates across an ultra-wide input voltage range to deliver clean, safe, and high-quality AC power—ideal for protecting mission-critical equipment.

This UPS series features a user-friendly interface for easy operation and a compact design that saves valuable installation space. It is perfectly suited for infrastructure needs in sectors such as IT, finance, traffic control, manufacturing, education, and government.

### 2.1.1 Front View




### 2.1.2 Rear View




**Note:** Unit ships with battery disconnect breaker on front panel in the OFF position. This disconnects both internal and external battery connections. The battery breaker must be switched to ON for operation of the UPS. Always switch battery breaker to OFF before servicing the unit.

# Chapter 1 - Safety Instructions

This manual contains important instructions that you should follow during installation and maintenance of the UPS and batteries. Please read all instructions before operating the equipment and save this manual for future reference.
Strictly follow the Safety instructions for equipment installation, operation and maintenance. Inappropriate operation may cause injury to personnel and equipment. Manufacturer assumes no responsibility for violation of operating instructions.

**Danger**

- This UPS contains LETHAL VOLTAGES. All repairs and service should be performed by AUTHORIZED SERVICE PERSONNEL ONLY. There are NO USER SERVICEABLE PARTS inside the UPS, except the batteries.
- Disconnect all power sources before any installation or manipulation of power wiring.
- Reverse connection polarity or short-circuit of battery terminals may cause harmful high current, or even fire. Always double check to make sure battery connections are correct.
- To prevent fires caused by overheating or short circuits, always use cables with an adequate current rating. Ensure all wiring has secure fixation and proper insulation.

**Warning**

- This UPS contains its own energy source (batteries). The UPS output may carry live voltage even when the UPS is not connected to an AC supply.
- To reduce the risk of fire or electric shock, install the UPS indoors in a temperature and humidity-controlled environment that's free of conductive contaminants.
- Here are the specific environmental requirements:
- Ambient temperature must not exceed 40° C (104° F).
- Do not operate the UPS near water or in areas with excessive humidity (maximum 90%).
- To reduce the risk of fire, connect only to a circuit provided with branch circuit over-current protection. Output overcurrent protection and disconnect switch must be provided by the customer.
- To comply with international standards and wiring regulations, the sum of the leakage current of the UPS and the total equipment connected to the output of this UPS must not have an earth leakage current greater than 3.5 milliamperes.
- If installing an optional rack-mount Battery Pack, install the Battery Pack directly below the UPS so that all wiring between the cabinets is as short as possible and is inaccessible to users.

**Caution**

- Batteries can present a risk of electrical shock or serious burn from high short-circuit current. Observe proper precautions. Servicing should be performed by qualified service personnel with a knowledge of batteries and required precautions. Keep unauthorized personnel away from batteries.
- Proper disposal of batteries is required. Refer to your local codes for disposal requirements.
- Never dispose of batteries in a fire. Batteries may explode when exposed to flame.
- In the event of fire occurring in the vicinity, please use dry powder fire extinguishers. The use of liquid fire extinguishing agents may cause electric shock.





## 7.1 Specification Table (cont'd)

| | | |
|---|---|---|
| AC Output | Output wiring system | Single phase (L/N+PE) |
| | Inverter output voltage | 100/110/**115**/120/125VAC ± 2% |
| | Waveform | Pure Sine wave |
| | Harmonic distortion | THD < 2% (linear load)<br>THD < 7% (nonlinear load) |
| | Output frequency | 50/60 ± 4Hz (Sync mode)<br>50/60Hz ± 1% (Fix Freq. mode) |
| | Overload capability | 105-125% ≥ 60s; 126-150% ≥ 30s; the recover point is 70% |
| | Transfer time | Battery <-> Line mode: 0ms |
| Efficiency | Line mode & Battery Mode | 86% |
| Communications | | RS232, LAN SNMP Network card |
| Alarm Function | | AC/DC input abnormal, overload condition and Inverter problems |
| Protection Function | | AC input or output above or below the range of voltage, overload, over temperature and short circuit protection |
| Noise | | <50dB |

# Chapter 3 - Installation

## 3.1 Product Inspection

- Unpack the cabinet, open the outer carton and remove the accessories packed with the cabinet.
- Carefully lift the cabinet out of the outer carton. Note: the UPS has internal batteries and is heavy, two people should lift the equipment out of the box.
- Inspect the equipment.
- Check the product appearance: display, terminal block, socket, connectors. No contamination or deformation should be found.
- Check accessories according to the packing list.
- Please contact us if damage or missing accessories are experienced.

## 3.2 Installation

Because of the heavy weight, be sure the mounting rack is capable of supporting the unit. Be sure the unit has good ventilation in front and behind the unit (at least 10 inches). Avoid high humidity (>90%) or high temperature (>40C) installations.

## 3.3 Wiring

NOTE:

- Do not apply power to the UPS until installation is totally completed.
- Do not make unauthorized changes to the UPS; otherwise, damage may occur to your equipment and void your warranty.

### 3.3.1 Input Wiring

- The UPS comes with a 12AWG input cable, with a standard North American AC plug. Plug the input cable into an appropriate outlet. The rated max input current is 22A @ 115VAC.

### 3.3.2 Output Wiring

8 output sockets are available for output connection from the UPS (refer to the figure above). The total rated output current is 20A @110VAC.

### 3.3.3 External Battery Connection (Optional)

When connecting an external battery it is ABSOLUTELY CRITICAL to follow instructions. Any mistake may result in serious injury caused by electric shock or fire or serious damage to the UPS System. The steps below must be strictly followed:

- The external battery bank must have a cut-off device, like a circuit breaker between the external connector on the unit and the battery (+) connection on the external battery bank.
- TURN OFF the battery circuit breaker on front of unit, make sure no harmful voltage can be found on the external battery connector.
- Use only a battery bank with correct voltage (48VDC)
- Once the installation is double checked, and wires connected, switch on the battery breaker on the front of the unit and then switch on the external battery bank breaker added by customer.





## 6.1 LCD Warning and Fault Code (cont'd)

| | | |
|---|---|---|
| 29 | UPS input rectifier protection | Low input voltage and overload |
| | | UPS internal failure, contact us. |
| 57 | Battery UN-connected | Check battery input wiring and battery cutoff device such as circuit breaker etc. |
| 59 | Charger fail | UPS internal failure, contact us. |
| 60 | EPO activated | Reset the external EPO switch; if no EPO switch installation, turn off EPO function via the operating panel |
| Battery icon flashing | | Battery not connected or battery low |
| | | Charger failure, contact us. |
| UPS not working normal line mode, with normal mains input | | Make sure Input circuit breaker is ON |
| | | Turn on the UPS via ON/OFF button |
| Backup time is not as long as expected | | Battery low, recharge the battery for at least 24hrs |
| | | Overload, reduce the loading |
| | | Battery aged, contact us. |
| UPS will not turn ON after pressing ON/OFF button | | Press the ON/OFF button for 3 seconds until you hear the beep |
| | | Battery low or not connected |
| | | UPS internal failure, contact us. |

## 6.1 LCD Warning and Fault Code

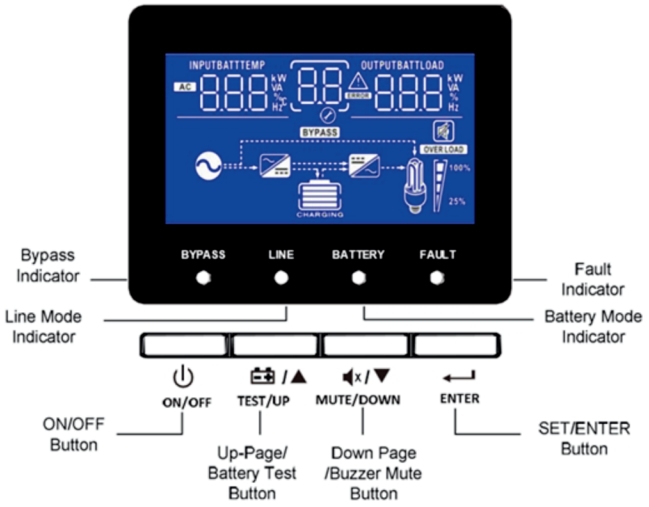
| Fault Code | Description | Possible Cause and Solution |
|---|---|---|
| 1 | UPS start up not successful | Battery low |
| | | UPS internal failure, contact us. |
| 2 | Internal DC BUS overvoltage protection | Half-wave rectifier load (hair dryer), half-wave solenoid valve, energy regenerated type load (motor, huge transformer, capacitor with residue charge), remove this kind of load and turn on the UPS again. |
| | | Over mains voltage, turn on the UPS again. |
| | | UPS internal failure, contact us. |
| 3 | Internal DC BUS undervoltage protection | Battery low or overload |
| | | UPS internal failure, contact us. |
| 10 | UPS output short-circuit | Remove short-circuit equipment from UPS |
| 22 | UPS over load | Reduce loading capacity below UPS rating |
| 23 | UPS over temperature | Make sure UPS should work in ambient of -10C to +45C, if the ambient temperature can't meet this spec, try to reduce the loading |
| | | Check and clean the ventilation inlet on the front panel and fan outlet on the rear panel. Make sure there is at least 10" clearance |
| | | UPS internal failure, contact us. |





# Chapter 4 - Panel & Operation Guide

## 4.1 Front panel




### 4.1.1 Turning on the UPS (Initial Setup)

The ON/OFF button are used to turn on/off the UPS. To turn the UPS ON, first switch the battery breaker to the "ON" position. Next, press the button until you hear a beep. The battery breaker should always remain in the ON position, with the ON/OFF button being used for normal operation.

### 4.1.2 Setting Enter button

The enter button is used to enter setting mode and confirm the change of the setting.

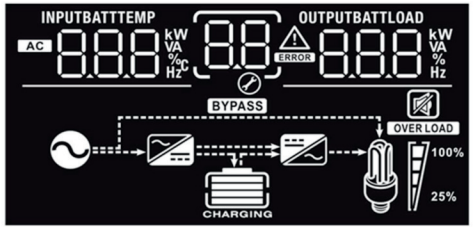
### 4.1.3 Up Page/Battery Self-test button

The Up Page button is used to switch the display between different settings and activate the battery self-test function. Battery self-test is only activated when the unit is in AC Input (Line) mode: Press the UP Button for 4 seconds to start the test.

### 4.1.4 Down Page/Buzzer Muting function

The Down Page button is used to switch the display between different settings and mute/recover the buzzer alarm function. Press the DOWN button until you hear a beep (~4 seconds) to turn on/off the buzzer.

### 4.1.5 LCD Display




| Icon | Functional Description |
|---|---|
| AC | Indicates the AC input |
| INPUTBATT | Indicates input voltage, input frequency, battery voltage |
| | **Warning flashing with warning code** |
| ERROR | **Fault lighting with fault code** |
| OUTPUTBATTLOAD | Indicates output voltage, output frequency, load percent, load in VA, load in Watts |
| CHARGING | Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charging status in line mode |
| OVER LOAD | Indicates overload |
| 100% 25% | Indicates the present load level by percentage |

| 0%~25% | 26%~50% | 51%~75% | 76%~100% |
|---|---|---|---|
| | | | |

| | |
|---|---|
| | Indicates unit connects to the mains |
| BYPASS | Indicates load is supplied by utility power |
| | Indicates the AC/DC PFC Rectifier and utility charger circuit is working |
| | Indicates the DC/AC Inverter circuit is working |
| | Indicates buzzer alarm is muted |





# Chapter 5 - Maintenance

## 5.1 Routine Maintenance

To make sure the UPS works normally, appropriate maintenance should be scheduled periodically.

The following items should be checked:

- Check UPS running status.
  - If the utility power is normal, UPS should work in line mode or in battery mode with no warning or fault indication.
- Check UPS running mode switching.
  - Cut off the AC input to simulate the utility power interrupt, UPS should transfer to battery mode. Then connect the AC input, UPS should return to line mode again.
- Check UPS panel display if it is consistent with the expected UPS running mode.
- Clean fan and air vents to maintain proper air circulation

## 5.2 Battery Maintenance

- The typical lifespan of a lead-acid battery is about 300 cycles or 2–3 years in an ambient temperature of 15–25°C. In contrast, a LiFePO4 lithium battery lasts around 2000 cycles or over 10 years.
- Batteries are critical components in a UPS (Uninterruptible Power Supply) system. Their lifespan is influenced by ambient temperature and cycle frequency. High temperatures and deep discharges can significantly reduce battery life.
- The battery test function can detect most battery issues. For external battery banks, the voltage of individual battery units can indicate health. In a non-charged state, a faulty battery's voltage will drop quickly or differ significantly from other units in the same bank. For a professional assessment, a battery diagnostic instrument measures battery impedance to evaluate the battery condition.
- If the UPS is not in use, charge the battery once every 6 months.
- Normally, the battery should be discharged once every 4 to 6 months.

Note: The battery replacement should be done by qualified technician.

# Chapter 6 - Troubleshooting

When you experience any trouble with the UPS, please check the following table first. If the problem cannot be solved, please visit our website support.
https://tyconsystems.com/tycon-support/

### 4.3.1 Turn on UPS (cont'd)

Turning on **without** utility power:

- With no mains input to feed the UPS, turn on the battery breaker on the front of the unit. Press and hold the ON/OFF for than 3 seconds until you hear the beep. In the turn on process, the UPS has the same operation as if it is connected to utility power.

### 4.3.2 Turn off UPS

- Remove AC Input Power.
- Press and hold the "ON/OFF" for 3 seconds until you hear the beep. The UPS will turn off after approximately 1 minute.
- Note: Please leave the DC breaker in the ON position, for normal operation.

### 4.3.3 Entering the Setting Mode

- When the UPS is in Bypass or Standby Mode, press the Enter button for 5 seconds. The UPS will enter the setting mode. Here, you can change the settings of output voltage, frequency, bypass enable/disable, ECO mode enable /disable, EPO function ON/OFF.
- Use "Up Page" and "Down Page" to change the setting to your desired setting, then press the enter key to confirm the change.
- After changing settings, turn off the mains power supply, wait for the UPS to turn off under battery mode, until the display turns off. Turn on the UPS again to activate the setting change.

### 4.3.4 Battery Self-test

- In Normal mode, press the Up Page button for more than 4 seconds until the buzzer beeps.
- The UPS switches to battery test mode, to check the status of the battery, the UPS exits the battery test mode if the battery is abnormal and the battery icon will be flashing.
- If the test mode result is normal, the UPS switches to normal mode automatically.

### 4.3.5 Buzzer Operation

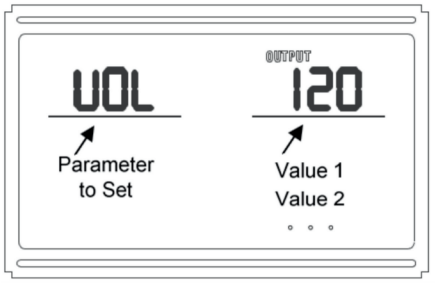
- Units ship with buzzers muted by default. To enable buzzer, press the mute/down button for a few seconds until you hear a beep.
- When UPS is in battery or bypass mode, UPS will warn with warning tone (Battery mode every four seconds; Bypass mode every two minutes), you can disable or enable the buzzer tone manually.
- Mute buzzer in Battery Mode and Icon changes to X.
- Mute buzzer in AC (Line) Mode and Icon flashes.





### 4.1.6 Parameter Setting

With unit powered by AC mains input, Line LED is lit. Press On/Off until you hear a beep (1 second). The UPS AC output will turn off and the Line light will turn off. Press Enter Key for 3 seconds to enter Parameter Setting mode, and the LCD display as follows:




- Use "Up" or "Down" buttons to choose the Parameter to set and the value to set.
- The present setting will show "OUTPUT" above the value as you scroll through the settings.
- When you see the value you want, press Enter to choose that value.

Note: The parameter settings will only be saved if the UPS has battery power and the AC mains input is disconnected. To ensure the settings are saved correctly:

1. Make sure the battery is properly connected and charged.
2. After setting the parameters, disconnect the AC mains input.
3. Wait about 1 minute for the UPS to automatically shut down and store the new settings in memory.
4. The updated parameters will take effect the next time the UPS is powered on.

### 4.1.6 Parameter Setting (cont'd)

| Parameter | Symbol | Values (Bold = Default) |
|---|---|---|
| Output Voltage |  | 100, 110, **115**, 120, 125 |
| Output Frequency |  | 000: Auto, the UPS will automatically detect the AC Input frequency and set the output frequency to match<br>050: Fixed 50Hz frequency<br>**060**: Fixed 60Hz frequency |
| Auto Turn On |  | **ON**: Enable auto turn on function, when AC input is connected, the UPS will automatically turn on and run in line mode<br>OFF: Disable auto turn on function, the UPS will stay on standby mode/bypass mode until manual turn on operation |
| Emergency Off |  | Emergency Power Off (EPO) Switch Response Setting<br>**001**: Enable<br>000: Disable<br>**ON1**: Enable EPO to activate when switch is open<br>ON0: Enable EPO to activate when switch is closed |
| Remote On/Off |  | Remote On/OFF (ROO) Switch Response Setting<br>**001**: Enable<br>000: Disable<br>0n1: Turn on UPS when switch is open<br>**0n0**: Turn on UPS when switch is closed |
| ECO Mode |  | ON: Enable Economy Mode<br>**OFF**: Disable Economy Mode |
| Bypass Setting |  | ON: AC Output is powered directly from the AC Input.<br>**OFF**: AC Output is powered from the internal inverter. |





## 4.2 UPS Working Mode

### 4.2.1 Normal mode

- Plug in the UPS to AC Power. Turn on the circuit breaker on the front of the UPS. If the mains supply is normal, the UPS will power up in Normal mode (Line mode) and filter the mains input for clean and stable AC output. The LED indicators will show the operating mode (Bypass, Line, Battery).
- If the AC output load is over 100% rated capacity, the buzzer beeps to remind you that the system is overloaded and you must reduce unnecessary load until the UPS loading level is less than 100%.
- If the battery indicator blinks cyclically, it means the UPS is disconnected from the battery or the battery condition is abnormal. Please check the battery connection and battery condition to ensure proper operation of the UPS.

### 4.2.2 Battery mode

- When mains utility power is in an abnormal condition, such as a blackout or fluctuation in voltage or frequency or waveform, the UPS will automatically switch to run in battery mode, supplying a clean AC Output.
- When the UPS is in Battery mode, it will beep once every 4s if the buzzer is enabled. By default the buzzers are disabled and can be enabled by long pressing the mute/down button.
- If the battery capacity is very low, the UPS will beep once every 1s if the buzzer is enabled. This alarm requires that the load be removed as soon as possible because the system is close to auto shutdown.
- Backup function can be tested through battery self-test via Up Page (battery test) button

### 4.2.3 Bypass mode

The UPS automatically works on bypass mode when the UPS start up fails or an abnormal situation occurs with the converters and the UPS can't function properly. The mains power is fed directly to the load through the bypass circuit without any protection. Please note that when UPS is running in bypass mode, UPS has no backup function either, because load power is supplied by the utility power directly.

## 4.3 Operation

### 4.3.1 Turn on UPS

Turning on **with** utility power:

- Connect the mains input to the UPS. Turn on the battery breaker, on the front of the UPS. The UPS will automatically start up if SON parameter = ON. If not, press and hold the ON/OFF button for more than 3 seconds until the buzzer beeps.
- The UPS begins to conduct self-test, seconds later, utility power icon and the Inverter icon show and the UPS begins to output supply and operate under the Normal mode. If the utility power is abnormal, the UPS will work under the Battery mode.