User Manual

Allen-Bradley

# Bulletin 1609 Uninterruptible Power Supply

Catalog Numbers 1609-D and 1609-B



Allen-Bradley • Rockwell Software

Rockwell Automation

## Important User Information

Solid-state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (publication SGI-1.1 available from your local Rockwell Automation® sales office or online at http://www.rockwellautomation.com/literature/) describes some important differences between solid-state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid-state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and Figures in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and Figures.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.



Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

| | |
|---|---|
|  | **WARNING:** Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss. |
|  | **ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence. |
|  | **SHOCK HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present. |
|  | **BURN HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures. |
| **IMPORTANT** | Identifies information that is critical for successful application and understanding of the product. |



| | |
|---|---|
|  | **WARNING:** This is a category C2 UPS product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional measures. |

## Additional Resources

These documents contain additional information concerning related products from Rockwell Automation

| Resource | Description |
|---|---|
| Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1 | Provides general guidelines for installing a Rockwell Automation industrial system. |
| Product Certifications website, http://www.ab.com | Provides declarations of conformity, certificates, and other certification details. |
| Publication Number: 1609-UM007_-EN-P | Bulletin 1609 UPS Management Software User Manual |
| Publication Number: 1609-UM008_-EN-P | Network Management Card - Cat. No. 1609-ENET User Manual |
| Publication Number: 1609-IN012_-EN-P | Bulletin 1609-D Installation Instructions |
| Publication Number: 1609-IN013_-EN-P | Bulletin 1609-B Installation Instructions |
| Publication Number: 1609-IN014_-EN-P | Surge Protective Device (Cat. No. 1609-SPD) Installation Instructions |
| Publication Number: 1609-IN015_-EN-P | Network Management Card (Cat. No. 1609-ENET) Installation Instructions |

You can view or download publications at http:/www.rockwellautomation.com/literature/. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

## Notes:

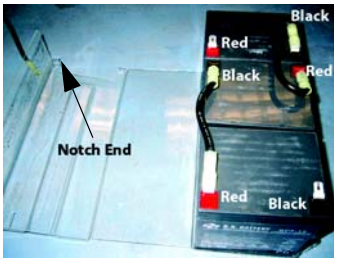
**ATTENTION:** Do not service the 1609-SPD without disconnecting the power sources due to electric shock hazard for risk of severe injury or death.

## Battery Wiring and Installation

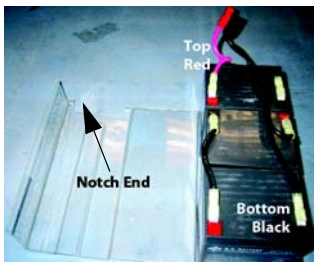
Note: Batteries are not included with the 1609-D UPS

1. To access the battery compartment remove the three screws and the battery door.


2. Remove the battery container, jumpers, and wire harness from the battery compartment. Place the battery container and batteries onto a flat surface. Use the provided jumper wires to connect the batteries in series. Connect the positive terminal (red) of the battery to the negative terminal (black) of another battery. See photo below for details.

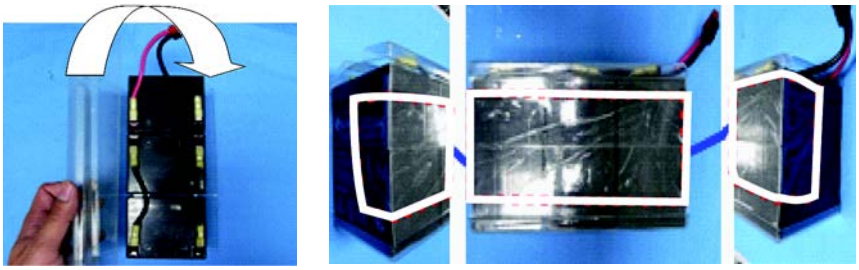



3. Connect the red wire of the harness to the positive terminal (top red) and the black wire of the harness to the negative terminal (bottom black). See photo below for details.



## Battery Wiring and Installation (cont.)

4. Fold the battery container and seal it with tape.



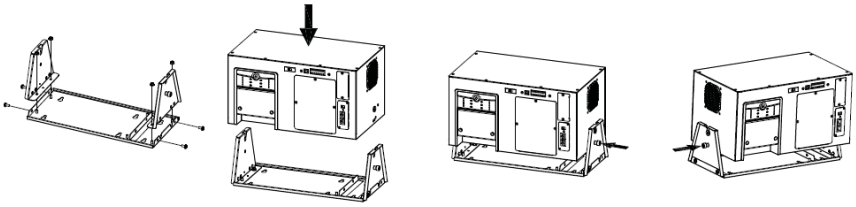
5. To connect the batteries to the UPS, insert the batteries into the battery compartment, open the white connector retainer and connect the two cables together as shown in the photo below.

6. To complete the battery installation, close the white connector retainer and reattach the battery door with the three screws (torque of 8.7+/-1.7 lb-in).


## Mount the UPS

The UPS-D is designed to mount on the back of the panel or to the floor of the enclosure. The UPS mounts to a bracket assembly (1609-BRK) that allows it to mount to either the panel or floor (see Figure 1 below).

**Figure 1 - Mounting the UPS**



## Hardwire UPS

Wiring of the UPS should be performed by a qualified electrician using the appropriate wire gauges.

## Selection of Cables

**Table 1 - AC Main Input/Output Wiring for UPS:**

| Item | Specification |
|---|---|
| Wire Size | 14 AWG |
| Minimum temperature | 75 °C |
| Wire conductor material | Copper only |
| Tightening torque for terminals | 4.4 lb-in. |

**Table 2 - DC Input / Output Wiring for External Battery Cabinet:**

| Item | Specification |
|---|---|
| Wire Size | 10 AWG |
| Minimum temperature | 75 °C |
| Wire conductor material | Copper only |
| Tightening torque for terminals | 12 lb-in. |

**WARNING:** To reduce the risk of fire, connect only to a circuit with 20 amperes maximum branch circuit overcurrent protection in accordance with the National Electric Code, ANSI/NFPA 70.

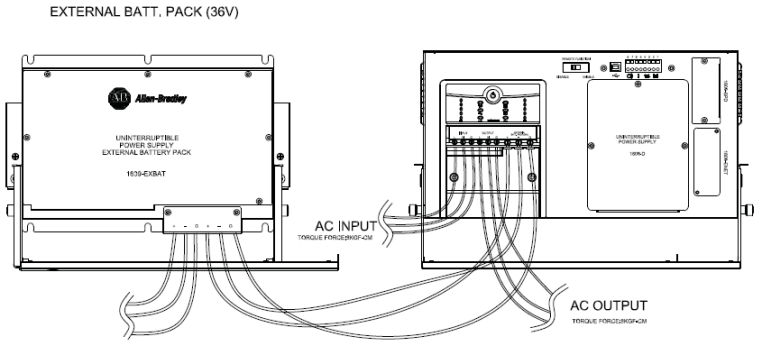
A disconnect switch shall be provided by others for AC output circuit.
To reduce the risk of fire, connect only to a circuit with branch circuit overcurrent protection for 20 amperes rating in accordance with the National Electric Code, ANSI/NFPA 70.

## Connect Power and Equipment to the UPS

**WARNING:** This UPS features Surge Protection Device (SPD) is located on the left front of the unit. Disconnect all power sources before servicing due to Electric Shock Hazard for risk of severe injury or death.

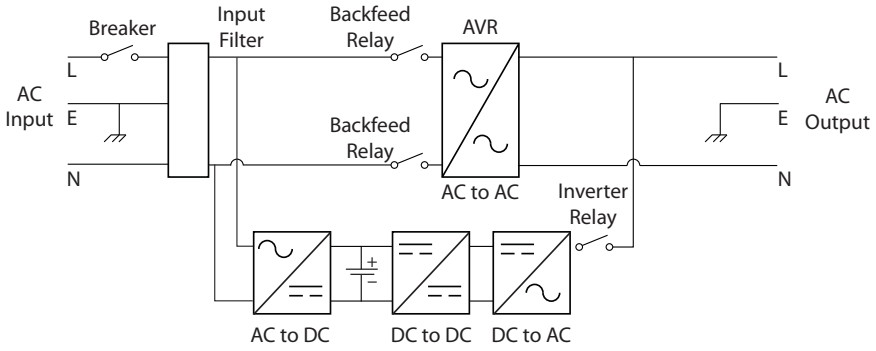
1. Connect the appropriate input power to the UPS's input (Line, Neutral and Ground) terminals (see Figure 2).
2. Connect the specified equipment to the UPS's output (Line, Neutral and Ground) terminals (see Figure 2).

**Figure 2 - System Wiring**




3. Connect any additional optional accessories (1609-ENET card).

## 1609-D Block Figure



# 1609-B Installation Instructions

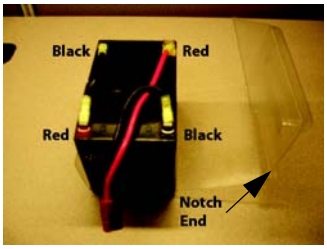
**ATTENTION:** Disconnect the 1609-SPD before servicing, due to electric shock hazard for risk of severe injury or death.

## Battery Wiring and Installation

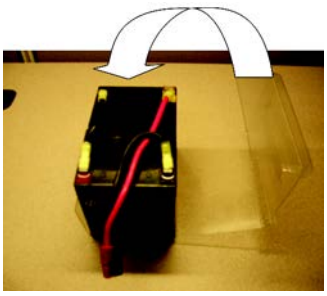
Note: Batteries are not included with the 1609-B UPS

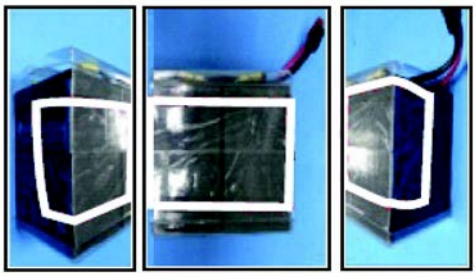
1. To access the battery compartment remove the three screws and the battery door.

2. Remove the battery container, jumpers, and wire harness from the battery compartment. Place the battery container and batteries onto a flat surface. Use the provided jumper wires to connect the batteries in series. Connect the positive terminal (red) of the battery to the negative terminal (black) of another battery. Connect the red wire of the harness to the positive terminal (top red) and the black wire of the harness to the negative terminal (bottom black). See photo below for details.




3. Fold the battery container and seal it with tape.





## Battery Wiring and Installation (cont.)

4. To connect the batteries to the UPS, insert the batteries into the battery compartment, open the white connector retainer and connect the two cables together as shown in the photo below.


5. To complete the battery installation, close the white connector retainer and reattach the battery door with the three screws (torque of 8.7+/-1.7 lb-in).


## Mount the UPS

The 1609-B UPS products are designed to mount to a heavy duty DIN-rail (see Figure 3 below). The 1609-B UPS products are also designed with an optional bracket assembly (Cat 1609-BRK) that allows it to mount to either the panel or floor (see Figure 4 below).

**Figure 3 - Standard DIN-Rail Mount**

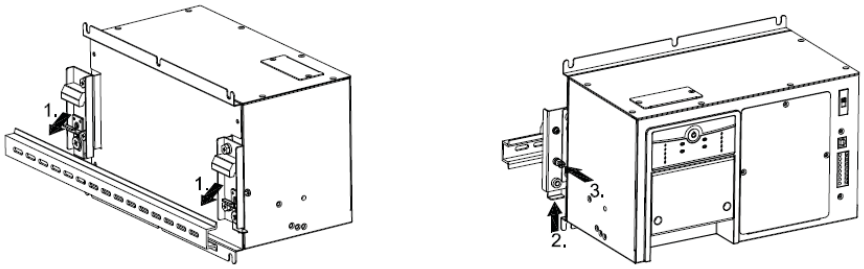
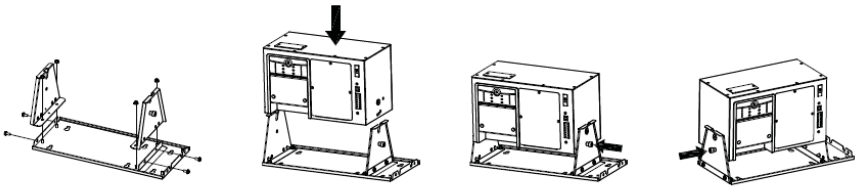



**Figure 4 - Optional Panel or Floor Mount**



## Hardwire UPS

Wiring of the UPS should be performed by a qualified electrician using the appropriate wire gauges.

## Selection of Cables

**Table 3 - AC Main Input / Output Wiring for UPS**

| Item | Specification |
|---|---|
| Wire Size | 14 AWG |
| Minimum Temperature | 75 °C |
| Wire Conductor Material | Copper only |
| Tightening Torque for Terminals | 4.4 lb - in. |

**WARNING:** To reduce the risk of fire, connect only to a circuit with 20 amperes maximum branch circuit overcurrent protection in accordance with the National Electric Code, ANSI/NFPA 70.

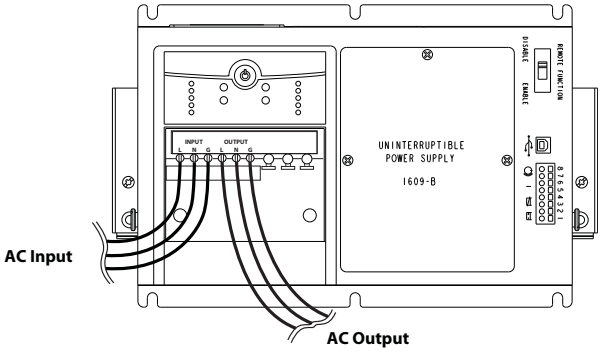
A disconnect switch shall be provided by others for AC output circuit.
To reduce the risk of fire, connect only to a circuit with branch circuit overcurrent protection for 20 amperes rating in accordance with the National Electric Code, ANSI/NFPA 70.

## Connect Power and Equipment to the UPS

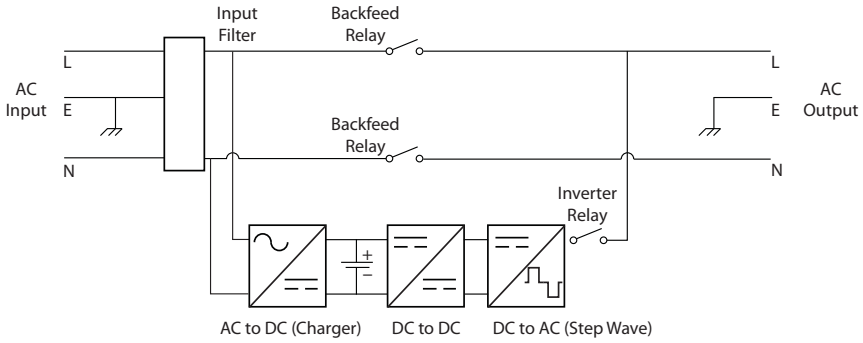
**WARNING:** This UPS features Surge Protective Device (SPD) located on the top of the unit. Please disconnect all power sources before servicing due to Electric Shock Hazard for risk of severe injury or death.

1. Connect the appropriate input power to the UPS's input (Line, Neutral and Ground) terminals (see Figure 5).
2. Connect the specified equipment to the UPS's output (Line, Neutral and Ground) terminals (see Figure 5).

**Figure 5 - System Wiring**




## 1609-B Block Figure



# 1609-EXBAT Installation Instructions

## Battery Wiring and Installation

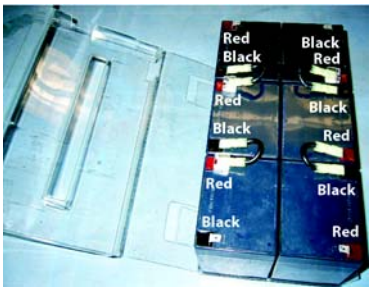
Only use battery wires that have been provided with the 1609-EXBAT.

**WARNING:** A disconnect switch shall be provided by others for DC output circuit. To reduce the risk of fire, connect only to a circuit with branch circuit overcurrent protection for 35 amperes rating in accordance with the National Electric Code, ANSI/NFPA 70.

Before connecting a battery pack to UPS, the emergent disconnecting device shall be provided between the UPS and battery pack.

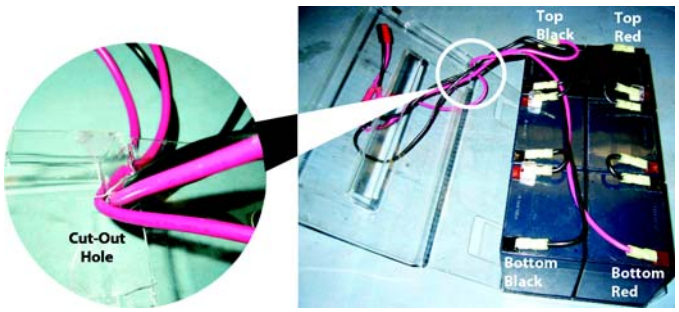
1. To access the battery compartment remove the six screws and the battery door.


2. Remove the battery container, jumpers and wire harness from the battery compartment. Place the battery container and batteries onto a flat surface. Use the provided jumper wires to connect the batteries in series. Connect the positive terminal (red) of the battery to the negative terminal (black) of another battery. See photo below for details.

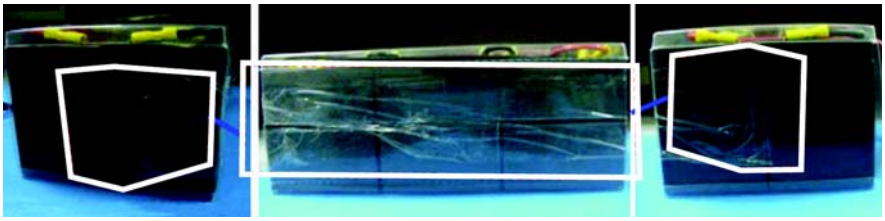


## Battery Wiring and Installation (cont.)

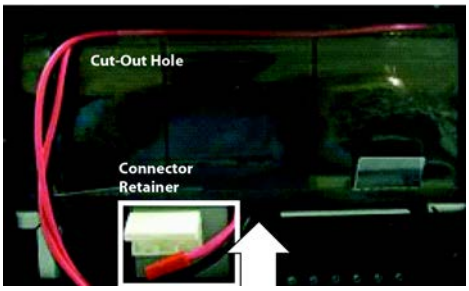
3. Connect the shorter set of red and black wires of the harness to the top terminals (red - to - red and black - to - black). Connect the longer set of red and black wires of the harness to the bottom terminals (red - to - red and black - to - black) and route the wires through the cut-out hole. See photo below for details.



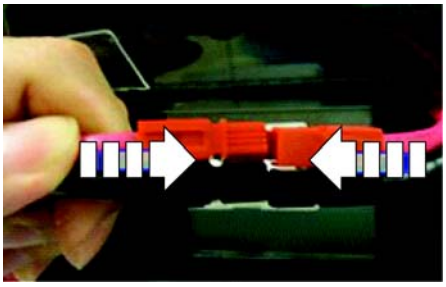

4. Fold the battery container and seal it with tape.



5. Insert the batteries into the battery compartment in the orientation as shown in the photo below.




6. Open the white connector retainer and connect the two cables together as shown in the photo below.



## Battery Wiring and Installation (cont.)

7. To complete the battery installation, insert the surplus wire harness into the free space, close the white connector retainer and reattach the battery door with the six screws (torque of 8.7+/-1.7 lb-in).


## Mount the 1609-EXBAT

The 1609-D UPS can be used with the External Battery Unit (1609-EXBAT). The 1609-EXBAT unit is designed to mount to a heavy duty DIN-rail (see Figure 6) or the optional mounting bracket assembly (1609-BRK) which allows it to mount to either the panel or floor (see Figure 7).

**Figure 6 - Heavy Duty DIN Rail Mount**

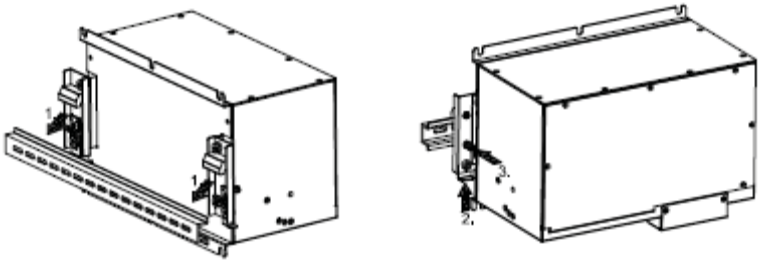
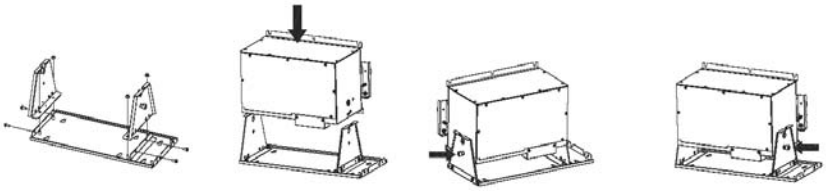


**Figure 7 - Panel or Floor Mount**



## Selection of Cables

**Table 4 - DC Input/Output Wiring for External Battery Cabinet**

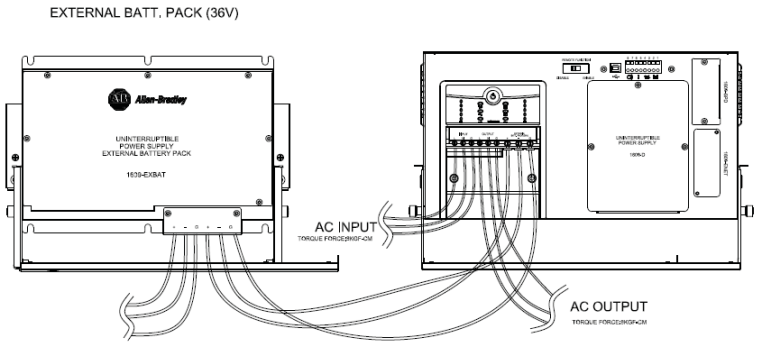
| Item | Specification |
|---|---|
| Wire Size | 10 AWG |
| Minimum temperature | 75 ℃ |
| Wire conductor material | Copper only |
| Tightening torque for terminals | 12 lb-in. |

## Connect 1609-EXBAT to the UPS

To install the 1609-EXBAT unit with the 1609-D UPS, connect the three 10 AWG wires from the 1609-EXBAT terminals to the 1609-D UPS terminals marked as 'EXTERNAL BATT PACK (36V)'. (See Figure 8)

Dispose of used batteries according to the battery instructions.

**Figure 8 - System Wiring**



# General Information 1609-D and 1609-B UPS Units

## Recommended Battery for Use with the UPS and 1609-EXBAT

Rockwell Automation battery catalog numbers 1609-SBAT and 1609-HBAT consist of the battery manufacturers listed below:

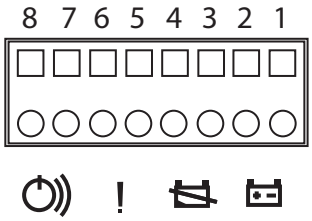
| Manufacturer | MH Number | Type | Rating |
|---|---|---|---|
| B & B Battery (USA) | MH19884 | HRLS 5.5-12 | 12V DC, 2.75 Ah |
| | | BP 5-12 | 12V DC, 5.0 Ah |
| | | HR 5.5-12 | 12V DC, 2.75 Ah |
| | | SHR7-12 | 12V DC, 3.375 Ah |
| GS Yuasa International Ltd. | MH12970 | NPH5-12 | 12V DC, 5.0 Ah |
| Shenzhen Center Power Tech Co., Ltd. | MH25860 | CP1250 | 12V DC, 5.0 Ah |
| Shenzhen Ritar Power Co., Ltd. | MH28539 | RT1250 | 12V DC, 5.0 Ah |
| CSB Battery Co., Ltd. | MH14533 | HR1221W | 12V DC, 5.25 Ah |

Not for use in a computer room as defined in the Standard for the Protection of Electronic Computer/Data Processing Equipment, ANSI/NFPA 75.

Dispose of used batteries according to the battery instructions.

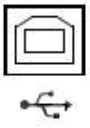
## Dry I/O Contacts

There is one Remote Enable/Disable Switch connection and 3 Dry I/O Contacts available on the front of the UPS. Do not apply external power to the Remote Enable/Disable Switch; however, the 3 sets of Dry Contacts require external power supplies (Contacts Rating is 1A/24V DC). Each of the dry contacts is used to provide a remote status indication of the UPS, as follows:




- 1 and 2 On Battery Contact (NO)
- 3 and 4 Low Battery Contact (NO)
- 5 and 6 Fault (Indicates UPS has faulted see trouble shooting section)
- 7 and 8 Remote On/O (Shorted (closed) for ON, Open for OFF)

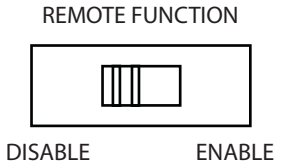
## USB Communication Port



The UPS supports a USB communication port for the end user to connect with a computer. The user may monitor all the UPS status through the USB port if the 1609 UPS Management Software is installed in the computer. The software is stored in the CD and can be found in the accessory bag.

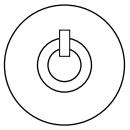
## Manual or Remote Enable/Disable of UPS Output Selection

The 1609 UPS output is designed to be manually or remotely enabled or disabled. User is required to enable or disable the remote function switch on the front panel.




- Selected 'DISABLE' for Manual Enable/Disable the UPS's Output.
- Selected 'ENABLE' for Remote Enable/Disable the UPS's Output.

## Manual Enable/Disable/ Self-test



The Power Button on the front of the UPS is used to manually enable or disable the output of the 1609-D UPS.

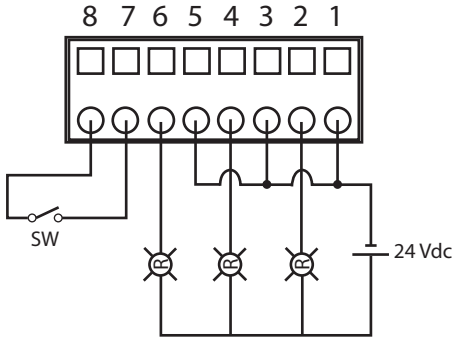
To enable the 1609-D UPS, press and hold the power button until one beep is heard.

To disable the 1609-D UPS, press and hold the power button until three beeps are heard, then release immediately (takes approximately 3 seconds).

To perform a self-test, press and hold the power button until two beeps are heard, then release immediately. (The UPS must operate for at least 4 hours before executing this function)

## Remote Enable/Disable

An external switch connected to the Dry I/O terminals 7 and 8 is required to remotely Enable or Disable the UPS output.




To enable the UPS, close the switch that is connected to the Dry I/O terminals 7 and 8.

To Disable the UPS, open the switch that is connected to the Dry I/O terminals 7 and 8.

# Display LED Indicators

| Indicator LED | Indicator Title | Description |
|---|---|---|
|  | Online | The UPS is supplying utility power to the connected equipment (see Troubleshooting). |
|  | AVR Trim ❶ | The UPS is compensating for a high utility voltage (see Troubleshooting). |
|  | AVR Boost ❶ | The UPS is compensating for a low utility voltage (see Troubleshooting). |
|  | On Battery | The UPS is supplying battery power to the connected equipment. |
|  | Overload | The connected equipment is drawing more than the UPS power rating allows (see Troubleshooting). |
|  | Replace Battery/Disconnect | The battery is disconnected or must be replaced (see Troubleshooting). |

❶ Applies to 1609-D only

# Troubleshooting

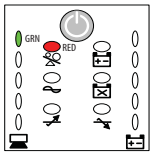
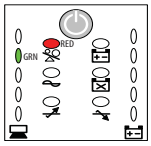
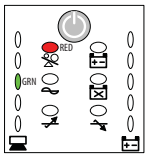
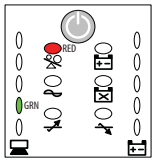
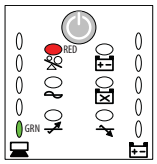
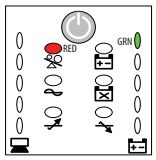
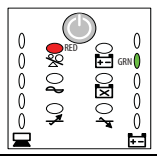
| Button | Function | Explanation |
|---|---|---|
|  | UPS Output Enable | Press and hold the button until one beep is heard, then release immediately |
| | UPS Output Disable | Press and hold the button until three beeps are heard, then release immediately |
| | Self-Test | Press and hold the button until two beeps are heard, then release immediately (The UPS must operate for at least 4 hours before executing this function) |

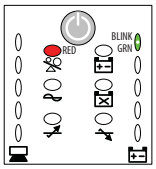
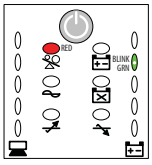
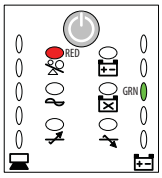
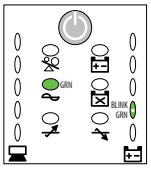
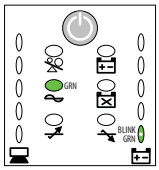
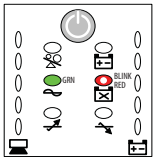
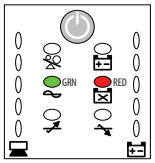
| Problem | Possible Cause | Solution |
|---|---|---|
| **No LED illuminates / No alarm** | UPS output is disabled or input utility power is not present | Have qualified electrician trouble shoot the input utility power system and make the necessary corrections. |
| **No UPS output** | The UPS has not been enabled | **Manually Enable** - Make sure the Remote Function selector switch is in the Disable position, then press and hold the UPS Power button until one beep is heard and release immediately.<br>**Remotely Enable** - Make sure the Remote Function selector switch is in the Enable position and verify that there is an adequate connection to the remote on/off dry I/O connection (terminals 7 & 8) |
| **UPS Operates on battery although input utility voltage exists** | The system may experience high, low or distorted input utility voltage | Reduce the UPS sensitivity by using the 1609 UPS Management software.<br>If the problem persists, move or connect the UPS with a known good quality utility power source. |
| **Input line utility power circuit breaker trip** | The system may have experienced an overload | Verify that the circuit breaker is sized properly.<br>Verify the load connected to the output of the UPS. Ensure that the load does not exceed the output rating of the UPS. |
| **FAULT LED illuminates** | An internal fault has been detected | Refer to the UPS LED Fault Indicators below to identify the specific fault that occurred and possible resolution. |
| **ONLINE LED illuminates, but no UPS output is available** | The UPS output connection may not be connected properly | Disable the UPS output and have qualified electrician troubleshoot the output connection system and make the necessary corrections. |
| **The battery did not provide expected runtime** | The batteries might be weak or the lifespan is due | Charge the batteries for 8 hours and retest the runtime.<br>If the runtime is still less than expected after charging, replace the batteries even if the Replace Battery LED doesn't illuminate. |
| **No communication between the UPS and your PC** | Wrong cable | Verify cable used. |
| | The connection cable is not firmly connected | Reconnect the communication cable firmly. |
| | PC Communication Port may have been used by another process or is defective | Check if there is other software or service accessing the Communication Port on your PC, or connect it to a different communication port. |
| | There is interference on the connection cable | Lay the cable differently or away from other cables and reconnect the cable. |

# UPS LED Fault Indicators

### General Clear Fault Procedure

Press and hold the button until three beeps are heard then release immediately to turn the UPS off then press and hold the button again until one beep is heard then release to enable the output.

| No. | Fault | Description | Solution |
|---|---|---|---|
| 1 | Output Short Circuit   | The UPS has detected a short circuit on the Output of the UPS and disabled its output. | Have a qualified electrician troubleshoot the load connected to the output to the UPS and remove the short circuit if present. |
| 2 | Output Overload   | The UPS has detected an overload and disabled its output. | To clear fault, follow the General Clear Fault Procedure described above. If the problem persists, contact Technical Support.<br>Verify the load connected to the output of the UPS. Ensure that the load does not exceed the output rating of the UPS. If the load exceeds the rating of the UPS please remove excess load or select the appropriate size UPS. If the problem persists, contact Technical Support.<br>To clear fault, follow the General Clear Fault Procedure described above. |
| 3 | Over Temperature from the Heatsink   | The UPS has detected an over temperature of the heatsink and disabled its output. | Have a qualified electrician checked the ambient temperature to make sure that it does not exceed 40 °C (1609-SBAT) or 50 °C (1609-HBAT). If it is over temperature, make the necessary correction to the system. This issue may be corrected by improving the room ambient temperature (add ventilation or provide air conditioning).<br>To clear fault, follow the General Clear Fault Procedure described above. |
| 4 | Over Ambient Temperature   | The UPS has detected an over ambient temperature and disabled its output. | Have a qualified electrician checked the ambient temperature to make sure that it does not exceed 40 °C (1609SBAT) or 50 °C (1609-HBAT). If it is over temperature, make the necessary correction to the system. This issue may be corrected by improving the room ambient temperature (add ventilation or provide air conditioning).<br>To clear fault, follow the General Clear Fault Procedure described above. |
| 5 | Over Voltage from The DC/DC Converter of Inverter   | The UPS has detected an over voltage of the DC/DC Converter and disabled its output. | Have a qualified electrician verify that the quality of utility voltage is within specification.<br>To clear the fault, follow the General Clear Fault Procedure described above.<br>If the fault is still present after attempting to clear fault, contact Technical Support. |
| 6 | Over Voltage from The Inverter   | The UPS has detected high voltage on the inverter and disabled its output. | Have a qualified electrician verify that the quality of utility voltage is within specification.<br>To clear fault, follow the General Clear Fault Procedure described above.<br>If the fault is still present after attempting to clear fault, contact Technical Support. |
| 7 | Under Voltage from The Inverter   | The UPS has detected low voltage on the inverter and disabled its output. | Have a qualified electrician verify that the quality of utility voltage is within specification.<br>To clear fault, follow the General Clear Fault Procedure described above.<br>If the fault is still present after attempting to clear fault, contact Technical Support. |

| No. | Fault | Description | Solution |
|---|---|---|---|
| 8 | Over Voltage from The Output of AVR   | The UPS has detected an over voltage on the output of AVR and disabled its output. | Have qualified electrician verify that the quality of the output voltage and the input utility voltage are within its specification.<br>To clear fault, follow the General Clear Fault Procedure described above and if the problem persists, contact Technical Support. |
| 9 | Under Voltage from The Output of AVR   | The UPS has detected low voltage on the output of AVR and disabled its output. | Have qualified electrician verify that the quality of the output voltage and the input utility voltage are within its specification.<br>To clear fault, follow the General Clear Fault Procedure described above and if the problem persists, contact Technical Support. |
| 10 | Fan Failure   | The UPS has detected that the fan of the UPS has failed and disabled its output. | To clear fault, follow the General Clear Fault Procedure described above and if the Fan Failure persists, contact Technical Support. |
| 11 | Charger Failure   | The UPS has detected that the battery charger circuit has failed; however, the UPS will continue running. | Clear this fault by removing the input utility voltage and batteries then plug the batteries back in place and turn the input utility voltage back on. Enable the UPS output to verify the fault.<br>If the Charger Failure persists, contact Technical Support. |
| 12 | TMOV Failure   | The UPS has detected that the MOV circuit has failed; however, the UPS will continue enabling the output. | Schedule to have a qualified electrician replace the MOV board (1609-SPD).<br>Remove the input utility power before service on this 1609-SPD due to risk of electrical shock. |
| 13 | Missing Battery   | The UPS has detected that the batteries are missing; however, the UPS will continue enabling the output. | Have a qualified electrician verify the battery connection for good contact and charge the batteries for 24 hours.<br>To clear fault, follow the General Clear Fault Procedure described above. If the battery status still indicates Missing Battery, new batteries are required. |
| 14 | Replace Batteries   | The UPS has detected that the batteries are bad; however, the UPS will continue running. | Have a qualified electrician verify the battery connection for good contact and charge the batteries for 24 hours.<br>To clear fault, follow the General Clear Fault Procedure described above. If the battery status still indicates Replace Battery, new batteries are required. |

# Bulletin 1609 UPS Management Software Troubleshooting

### General Clear Fault Procedure

Press and hold the button until three beeps are heard then release immediately to turn the UPS off then press and hold the button again until one beep is heard then release to enable the output.

| Status Indications | Indication Description | Solution |
|---|---|---|
| Buzzer Alarm | The UPS has detected a fault and generate a buzzer alarm. | Verify the type of fault from the Status Indicators or the LEDs on the UPS for further troubleshooting. |
| Test In Progress | The UPS is currently in a test mode. | Do not interrupt the UPS testing. The UPS is doing battery test. |
| UPS Fault | The UPS has detected a fault and disabled its output. | Verify the type of fault from the Status Indicators or the LEDs on the UPS for further troubleshooting.<br>To clear fault, follow the General Clear Fault Procedure described above and if the fault persists, contact Technical Support. |
| Battery Low | The UPS has detected that the batteries are low. | The batteries must be charged for 24 hours and re-verify the battery status. If the batteries still indicate to be low, replace the batteries. |
| Power Failed | The UPS has detected that the input utility voltage has failed. | Verify that the input utility voltage is within the UPS's input specification.<br>If it is not, make the necessary correction to the input utility power system. |
| Overheat | The ambient temperature is greater than 60 °C, or some internal components are over temperature. | Have a qualified electrician checked the ambient temperature to make sure that it does not exceed 40 °C(1609-SBAT) or 50 °C (1609-HBAT). If the temperature exceeds the UPS rating, make the necessary correction to the system. This issue may be corrected by improving the room ambient temperature (add ventilation or provide air conditioning).<br>To clear fault, follow the General Clear Fault Procedure described above and if the fault persists, contact Technical Support. |
| Overload | The UPS has detected that output load of UPS is greater than 110%. | Verify that the load does not exceed the load specification. If it is, remove the excess load from the UPS's output and clear its fault. If the problem persists, have a qualified electrician troubleshoot the UPS Load System and make the necessary corrections or select the appropriate size of UPS. If the problem persists, contact Technical Support. |
| Load Warning | The output load over the warning threshold. | Verify the output load. If it is close to 100% load, remove the excess load or select the appropriate size of UPS. |
| Load Severity | The output load over the severity threshold. | Verify the output load. If it is actually at 100% load, remove some of the non-essential load or select the appropriate size of UPS. |
| UPS Disconnect | The UPS has detected a communication loss between the UPS and the computer. | Please check the USB cable between computer and UPS for secure connection or replace the cable with a known good cable.<br>If communication is established, re-open the UPS Management software. If the problem persists, contact Technical Support. |
| Output Abnormal | To indicate the output voltage is abnormal. | Have qualified electrician verify that the quality of the output voltage and the input utility voltage are within its specification.<br>To clear fault, follow the General Clear Fault Procedure described above and if the problem persists, contact Technical Support. |
| Output Off | The UPS is operating in standby mode, or UPS is faulted. | If it is identified as the UPS fault shutdown then turn the UPS off, and then turn UPS on again to reset the fault. If the fault persists, contact Technical Support. |
| UPS System Off | The UPS system is in the standby state. | If it is identified as the UPS fault shutdown then turn the UPS off. Turn UPS on again to reset the fault. If the fault persists, contact Technical Support. |
| Awaiting Power | The battery is depleted and the UPS awaits the return of input utility voltage. | Apply the input utility voltage to the UPS. |
| Battery Need Replace | The UPS has detected that the battery is bad or opened. | Have a qualified electrician verify the battery connection for good contact and charge the batteries for 24 hours.<br>To clear fault, follow the General Clear Fault Procedure described above. If the battery status still indicates Battery Need Replace, new batteries are required. |
| Battery Depleted | The UPS has detected that the batteries are depleted. | Have a qualified electrician verify the battery connection for good contact and charge the batteries for 24 hours.<br>To clear fault, follow the General Clear Fault Procedure described above. If the battery status still indicates Battery Depleted, new batteries are required. |

# Bulletin 1609 Network Management Card Troubleshooting

General Clear Fault Procedure

Press and hold the button until three beeps are heard then release immediately to turn the UPS off then press and hold the button again until one beep is heard then release to enable the output.

| Status Indications | Indication Description | Solution |
|---|---|---|
| UPS Disconnect | The communication between UPS and the 1609-ENET card has been disconnected. | Check the 1609-ENET LEDs for the communication status and the operation of UPS.<br>If the UPS is operating normal but the LEDs of the 1609-ENET card are not working properly, make sure the cable is securely connected from the 1609-ENET card to the computer.<br>If the LEDs of the 1609-ENET card is still not working properly, apply a known good 1609-ENET card to verify whether the failure is on the UPS or the 1609-ENET. |
| Buzzer Alarm | The UPS has detected a fault and generated a buzzer alarm. | Please verify the type of fault from the Status Indicators or the LEDs on the UPS for further troubleshooting. |
| Input Out Of Range | The UPS has detected that the input utility voltage is out of range. | Verify that the input utility voltage is within the UPS's input specification.<br>If it is not, makes the necessary correction to the input utility power system. |
| Battery Low | The UPS has detected that the batteries are low. | The batteries must be charged for 24 hours. After charging batteries verify the battery status. If the batteries still indicate that they are low, replace the batteries. |
| Battery Depleted | The UPS has detected that the batteries are depleted. | Have a qualified electrician verify the battery connection for good contact and charge the batteries for 24 hours.<br>To clear fault, follow the General Clear Fault Procedure described above. If the battery status still indicates Battery Depleted, new batteries are required. |
| Battery Need Replace | The UPS has detected that the battery is bad or opened. | Have a qualified electrician verify the battery connection for good contact and charge the batteries for 24 hours.<br>To clear fault, follow the General Clear Fault Procedure described above. If the battery status still indicates Battery Need Replace, new batteries are required. |
| Test In Progress | The UPS is currently in a test mode. | Do not interrupt the UPS testing. |
| Test Fail | The UPS has detected that the battery is bad. | Verify that the battery is not disconnected or replace the batteries with a brand new set of batteries. Ensure the UPS ran for at least 4 hours before test. |
| Output Off | The UPS is operating in standby mode or fault shutdown. | If it is identified as the UPS fault shutdown then turn the UPS off, and then turn UPS on again to reset the fault If the fault persists, contact Technical Support. |
| UPS System Off | The UPS system is in the standby state. | If it is identified as the UPS fault shutdown then turn the UPS off, and then turn UPS on again to reset the fault. If the fault persists, contact Technical Support. |
| UPS Shutdown | The UPS was commanded to shut down or fault shutdown. | If it is identified as the UPS fault shutdown then turn the UPS off, and then turn UPS on again to reset the fault. If the fault persists, contact Technical Support. |
| Output Over Voltage | The UPS has detected that the output voltage is above the UPS's output specification. | Have qualified electrician verify that the quality of the output voltage and the input utility voltage are within its specification.<br>To clear fault, follow the General Clear Fault Procedure described above and if the problem persists, contact Technical Support. |
| Output Under Voltage | The UPS has detected that the output voltage is below the UPS's output specification. | Have qualified electrician verify that the quality of the output voltage and the input utility voltage are within its specification.<br>To clear fault, follow the General Clear Fault Procedure described above and if the problem persists, contact Technical Support. |
| Overload | The UPS has detected that the UPS's output load is greater than 110%. | Verify that the load does not exceed the load specification.<br>If it is, remove the excess load from the UPS's output and clear the fault. If the problem persists, have a qualified electrician troubleshoot the UPS Load System and make the necessary corrections or select the appropriate size of UPS. If the problem persists, contact Technical Support. |
| Over Temperature | The UPS has detected that the ambient temperature is greater than 60 °C, or some of the internal components are over temperature. | Have a qualified electrician check the ambient temperature to make sure that it does not exceed 40°C (1609-SBAT) or 50°C (1609-HBAT). If it is over, make the necessary correction to the system. This issue may be corrected by improving the room ambient temperature (add ventilation or provide air conditioning).<br>Following the General Clear Fault Procedure to clear this fault. |
| Fan Abnormal | The UPS has detected that the UPS's fan has failed. | To clear fault, follow the General Clear Fault Procedure described above and if the Fan Failure persists, contact Technical Support. |
| Inverter Abnormal | The UPS has detected that the UPS inverter circuit has failed. | Have a qualified electrician verify that the quality of utility voltage is within specification.<br>To clear fault, follow the General Clear Fault Procedure described above and if the Inverter Failure persists, contact Technical Support. |
| Charger Abnormal | The UPS has detected that the UPS battery charger circuit has failed. | Clear this fault by removing the input utility voltage and batteries. Plug the batteries back in place and turn the input utility voltage back on. Enable the UPS output to verify the fault.<br>If the Charger Failure persists, contact Technical Support. |

| Technical Specifications —1609-D, 120V | | 1609-D600N | 1609-D1000N | 1609-D1500N |
|---|---|---|---|---|
| Input | V nom. | 120V | | |
| | Capacity | 600 VA (390 W) | 1000 VA (650 W) | 1500 VA (980 W) |
| | Voltage Range, default | 90...145V | | |
| | Voltage Range, widest online | 90...145V | | |
| | Current nom. | 5.5 A | 8.8 A | 13 A |
| | Capacity Frequency | 50/60 Hz ± 3 Hz | | |
| | PFC | None | | |
| Output | V nom. | 120V | | |
| | Capacity | 600 VA (390 W) | 1000 VA (650 W) | 1500 VA (980 W) |
| Online | Output Voltage Range, default | 108...132V | | |
| | Output Voltage Range, widest online | 108...132V | | |
| | Transfer Point Accuracy | ± 3 % | | |
| On Battery | V nom | 120V (sine wave) | | |
| | Frequency | 50/60 Hz ± 0.5Hz | | |
| | THD | ≤ 10% Full Linear Load | | |
| Short Circuit Protection | Crest Factor | 2.2:1 | | |
| Efficiency | On Battery (Typical with resistive load) | 75% | | |
| | Online - Typical with resistive load excluding AVR mode) | 86% | 94% | 95% |
| Protection | Surge | 380 Joules | | |
| | Overload (Shutdown after 10 s) | > 110...130% | | |
| | Overload (Shutdown immediately) | > 130% | | |
| | Output Short Online/Battery | Premises branch circuit over-current protection/Shutdown | | |
| | Thermal Protection | UPS inside temperature ≥ 60 °C | | |
| Regulatory | Safety | UL1778, CSA C22.2 No. 107.3, EN/IEC62040-1 | | |
| | EMC | FCC & CE (EN 62040-2) | | |
| | Markings | UL, cULus, FCC, CE, C-Tick | | |
| Battery Pack | Run Time | ≥5 min (at 25 °C, full R load) | ≥3.5 min (25 °C, full R load) | ≥2.5 min (at 25 °C, full R load) |
| | Type | Sealed Lead Acid Battery 12V/5Ah (for 0...40 °C B.B. BP5-12) 12V/5.5Ah (for 0...50 °CB.B. HRL5.5-12) | | |
| | Voltage | 36V | | |
| | Charger | Current limited, constant voltage float charger | | |
| | Recharger Time | Less than 8 hr to 90% capacity after discharge with full load | | |
| | Lifetime | 2...3 years at 25 °C ambient temperature | | |
| Environment | Temperature | Operating Standard Battery 0...+40 °C (+32...+104 °F) Hi-Temperature Battery 0...+50 °C (+32...+122 °F) Non-operating/Storage -15...+45 °C (+5...+113 °F) | | |
| | Altitude | Operating 0...6600 feet (0... 2000 meters) | | |
| | Humidity | Operating/Storage 5...95% RH (Non-condensing) | | |
| | Heat Output | On Line, Full load: 217 BTU/hr<br>On Line, Full load, Charging: 296 BTU per hour<br>On Battery: Full Load: 1331 BTU per hour | On Line, Full load: 142BTU/hr<br>On Line, Full load, Charging: 221 BTU per hour<br>On Battery: Full Load: 2218BTU per hour | On Line, Full load: 176BTU/hr<br>On Line, Full load, Charging: 256BTU per hour<br>On Battery: Full Load: 3344BTU per hour |
| | Audible Noise | < 50 dBA @ Front Side 1 Meter | | |
| Mechanical | Approximate Dimensions L*W*H In. (mm) | 8.66 x 16.14 x 10.24 (220 x 410 x 260) | | |
| | Approximate Weight lbs (kg) | 29.7 (13.5) | 30.1 (13.7) | 31 (14.1) |

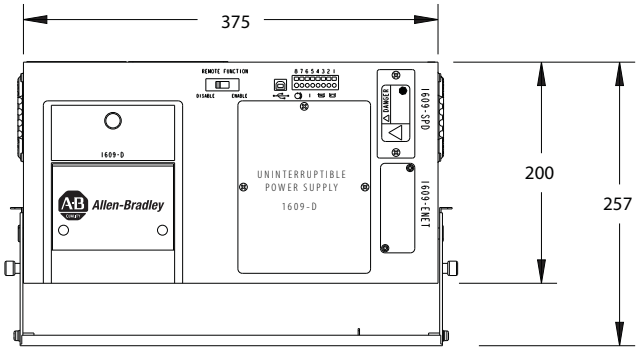
| Technical Specifications —1609-D, 230V | | 1609-D600E | 1609-D1000E | 1609-D1500E |
|---|---|---|---|---|
| Input | V nom. | 230V | | |
| | Capacity | 600 VA (390W) | 1000 VA (650W) | 1500 VA (980 W) |
| | Voltage Range, default | 180...280V | | |
| | Voltage Range, widest online | 180...280V | | |
| | Current nom. | 3.3 A | 4.7 A | 7.1 A |
| | Capacity Frequency | 50/60 Hz ±3Hz | | |
| | PFC | None (load power factor is reflected in the input line current) | | |
| Output | V nom. | 230V | | |
| | Capacity | 600 VA (390 W) | 1000 VA (650 W) | 1500 VA (980 W) |
| Online | Output Voltage Range, default | 207...253V | | |
| | Output Voltage Range, widest online | 207...253V | | |
| | Transfer Point Accuracy | ±3% | | |
| On Battery | V nom | 230V (Sine Wave) | | |
| | Frequency | 50/60 Hz ±0.5 Hz (Factory default: 50 Hz ± 0.5 Hz) | | |
| | THD | ≤ 10% (Full Linear Load) | | |
| Short Circuit Protection | Crest Factor | 2.2:1 | | |
| Efficiency | On Battery (Typical with resistive load) | 75%(Typical with resistive load) | | |
| | Online - Typical with resistive load excluding AVR mode) | 86% | 94% | 95% |
| Protection | Surge | 660 Joules (Total performance rated with 10 x 1000 µs Pulse) | | |
| | Overload (Shutdown after 10 s) | > 110...130% | | |
| | Overload (Shutdown immediately) | > 130% | | |
| | Output Short Online/Battery | Premises branch circuit over-current protection/Shutdown | | |
| | Thermal Protection | UPS inside temperature ≥ 60 ºC | | |
| Regulatory | Safety | UL1778, CSA C22.2 No. 107.3-5, EN/IEC62040-1 | | |
| | EMC | FCC & CE (Class A) | | |
| | Markings | UL, cULus, FCC, CE | | |
| Battery Pack | Run Time | ≥5 min (at 25 °C, full R load) | ≥3.5 min (25 °C, full R load) | ≥2.5 min (at 25 °C, full R load) |
| | Type | Sealed Lead Acid Battery 12V/5Ah (for 0...40 °C B.B. BP5-12) 12V/5.5Ah (for 0...50 °CB.B. HRL5.5-12) | | |
| | Voltage | 36V | | |
| | Charger | Current limited, constant voltage float charger | | |
| | Recharger Time | Less than 8 hr to 90% capacity after discharge with full load | | |
| | Lifetime | 2...3 years at 25 °C ambient temperature | | |
| Environment | Temperature | Operating Standard Battery 0...+40 °C (+32...+104 °F) Hi-Temperature Battery 0...+50 °C (+32...+122 °F) Non-operating/Storage -15...+45 °C (+5...+113 °F) | | |
| | Altitude | Operating 0...6600 feet (0... 2000 meters) | | |
| | Humidity | Operating/Storage 5...95% RH (Non-condensing) | | |
| | Heat Output | On Line, Full load: 217 BTU/hr<br>On Line, Full load, Charging: 296 BTU per hour<br>On Battery: Full Load: 1331 BTU per hour | On Line, Full load: 142BTU/hr<br>On Line, Full load, Charging: 221 BTU per hour<br>On Battery: Full Load: 2218BTU per hour | On Line, Full load: 176BTU/hr<br>On Line, Full load, Charging: 256BTU per hour<br>On Battery: Full Load: 3344BTU per hour |
| | Audible Noise | < 50 dBA @ Front Side 1 Meter | | |
| Mechanical | Approximate Dimensions L*W*H In. (mm) | 16.15 x 8.67 x 10.24 (410 x 220 x 260 ) | | |
| | Approximate Weight lbs (kg) | 29.7 (13.5) | 30.1 (13.7 ) | 31 lb (14.1) |

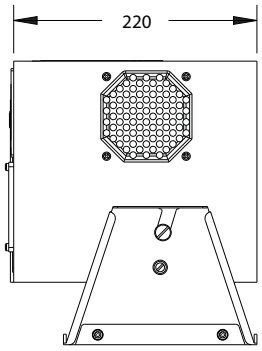
| Technical Specifications —1609-B, 120V | | 1609-B600N | 1609-B1000N |
|---|---|---|---|
| Input | V nom. | 120V | 120V |
| | Capacity | 600 VA (360 W) | 1000 VA (600 W) |
| | Voltage Range, default | 96...138V | |
| | Voltage Range, widest online | 96...138V | |
| | Current nom. | 5.4 A | 8.9 A |
| | Capacity Frequency | 50/60 Hz ± 3 Hz | 50/60 Hz ± 3 Hz |
| | PFC | None | None |
| Output | V nom. | 120V | |
| | Capacity | 600 VA (360 W) | 1000 VA (600 W) |
| Online | Output Voltage Range, default | 96...138V | |
| | Output Voltage Range, widest online | 96...138V | |
| | Transfer Point Accuracy | ± 3% | |
| On Battery | V nom | 120V (step wave) | |
| | Frequency | 50/60 Hz ± 1 Hz | |
| | THD | 47.5% (step wave) | 47.6% (step wave) |
| Short Circuit Protection | Crest Factor | 2.5:1 | |
| Efficiency | On Battery (Typical with resistive load) | 80% Typical with resistive load | |
| | Online - Typical with resistive load excluding AVR mode) | 94% Typical with resistive load | |
| Protection | Surge | 380 Joules (Total performance rated with 10*1000 µ s pulse) | |
| | Overload (Shutdown after 10 s) | > 110...130% - shutdown after 5 sec | |
| | Overload (Shutdown immediately) | 130% shutdown immediately | |
| | Output Short: Online | Premises branch circuit over-current protection | |
| | Output Short: Battery | Shutdown | |
| | Thermal Protection | UPS inside temperature ≥ 70 °C | |
| Regulatory | Safety | UL1778, CSA C22.2 No. 107.3-05, EN/IEC62040-1 | |
| | EMC | FCC & CE (Class A) | |
| | Markings | UL, cULus, FCC, CE, C-Tick | |
| Battery Pack | Run Time | ≥5 min (at 25 °C, full load = 360W, PF = 0.6...0.75) | ≥2 min (at 25 °C, full load = 600W, PF = 0.6...0.75) |
| | Type | Sealed Lead Acid Battery | |
| | | 12V/5Ah (for 0...40 °C: B.B. BP5...12) | |
| | | 12V/5.5 Ah (for 0...50 °C: B.B. HRL5.5...12) | |
| | Voltage | 24V | |
| | Charger | Current limited, constant voltage float charger | |
| | Recharger Time | Less than 12 hrs to 90% capacity after discharge with full load | |
| | Lifetime | 2...3 years at 25 °C ambient temperature | |
| Environment | Temperature | Operating Standard Battery 0...+40 °C (+32...+104 °F) Hi-Temperature Battery 0...+50 °C (+32...+122 °F)<br>Non-operating/Storage -15...+45 °C (+5...+113 °F) | |
| | Altitude | Operating 0...6600 feet (0... 2000 meters) | |
| | Humidity | Operating/Storage 5...95% RH (Non-condensing) | |
| | Heat Output | On Line, Full load: 107 BTU/hr<br>On Line, Full load, Charging: 160 BTU per hour<br>On Battery: Full Load: 1228 BTU per hour | On Line, Full load: 178 BTU/hr<br>On Line, Full load, Charging: 231 BTU per hour<br>On Battery: Full Load: 2047 BTU per hour |
| | Audible Noise | < 45 dBA @ Front Side 1 Meter | |
| Mechanical | Approximate Dimensions L*W*H In. (mm) | 6.1 x 11 x 7.09 (155 x 300 x 180) | |
| | Approximate Weight lbs (kg) | 14.5 (6.6) | 14.7 (6.7) |

| Technical Specifications —1609-B, 230V | | 1609-B600E | 1609-B1000E |
|---|---|---|---|
| Input | V nom. | 230V | 230V |
| | Capacity | 600 VA (360 W) | 1000 VA (600 W) |
| | Voltage Range, default | 184...265V | |
| | Voltage Range, widest online | 184...265V | |
| | Current nom. | 2.8 A | 4.7 A |
| | Capacity Frequency | 50/60 Hz ± 3 Hz | |
| | PFC | None (Load power factor is reflected in the input line current) | |
| Output | V nom. | 230V | |
| | Capacity | 600 VA (360 W) | 1000 VA (600 W) |
| Online | Output Voltage Range, default | 184...265V | |
| | Output Voltage Range, widest online | 184...265V | |
| | Transfer Point Accuracy | ± 3% V AC | |
| On Battery | V nom | 230V (step wave) | |
| | Frequency | 50/60 Hz ± 1 Hz | |
| | THD | N/A | N/A |
| Short Circuit Protection | Crest Factor | 2.5:1 | |
| Efficiency | On Battery (Typical with resistive load) | 70% Typical with resistive load | |
| | Online - Typical with resistive load excluding AVR mode) | 93% Typical with resistive load | |
| Protection | Surge | 440 Joules (Total performance rated with 10*1000 µ s pulse) | |
| | Overload (Shutdown after 5s) | > 110...130% | |
| | Overload (Shutdown immediately) | > 130% | |
| | Output Short: Online | Premises branch circuit over-current protection | |
| | Output Short: Battery | Shutdown | |
| | Thermal Protection | UPS inside temperature ≥ 70 °C | |
| Regulatory | Safety | UL1778, CSA C22.2 No. 107.3-05, EN/IEC62040-1 | |
| | EMC | FCC & CE (Class A) | |
| | Markings | UL, cULus, FCC, CE | |
| Battery Pack | Run Time | ≥5 min (at 25 °C, full load = 360W, PF = 0.6...0.75) | ≥2 min (at 25 °C, full load = 600W, PF = 0.6...0.75) |
| | Type | Sealed Lead Acid Battery | |
| | | 12V/5Ah (for 0...40 °C: B.B. BP5...12) | |
| | | 12V/5.5 Ah (for 0...50 °C: B.B. HRL5.5...12) | |
| | Voltage | 24V | |
| | Charger | Current limited, constant voltage float charger | |
| | Recharger Time | Less than 12 hrs to 90% capacity after discharge with full load | |
| | Lifetime | 2...3 years at 25 °C ambient temperature | |
| Environment | Temperature | Operating Standard Battery 0...+40 °C (+32...+104 °F) Hi-Temperature Battery 0...+50 °C (+32...+122 °F)<br>Non-operating/Storage -15...+45 °C (+5...+113 °F) | |
| | Altitude | Operating 0...6600 feet (0... 2000 meters) | |
| | Humidity | Operating/Storage 5...95% RH (Non-condensing) | |
| | Heat Output | On Line, Full load: 107 BTU/hr<br>On Line, Full load, Charging: 160 BTU per hour<br>On Battery: Full Load: 1228 BTU per hour | On Line, Full load: 178 BTU/hr<br>On Line, Full load, Charging: 231 BTU per hour<br>On Battery: Full Load: 2047 BTU per hour |
| | Audible Noise | < 45 dBA @ Front Side 1 Meter | |
| Mechanical | Approximate Dimensions LxWxH In. (mm) | 13.4 x 7.29 x 8.27 (340 x 185 x 210) | |
| | Approximate Weight lbs (kg) | 14.5 (6.6) | 14.7 (6.7) |

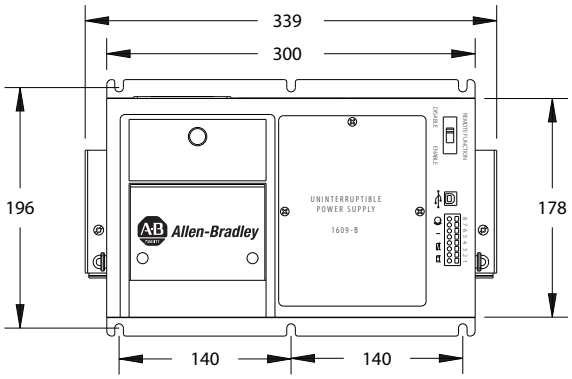
# 1609 UPS Dimensions

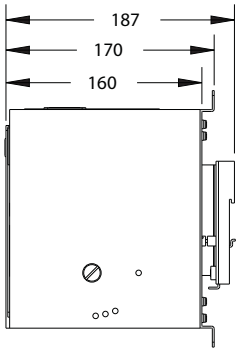
## 1609-D UPS Dimensions



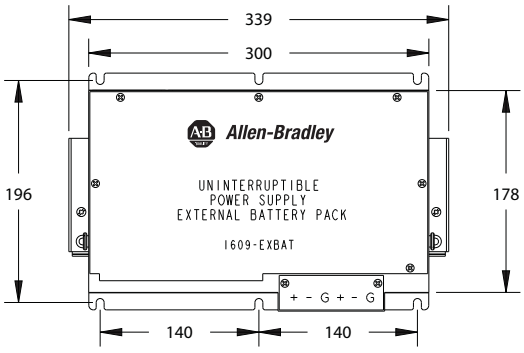



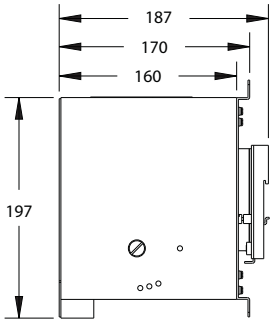

## 1609-B UPS Dimensions



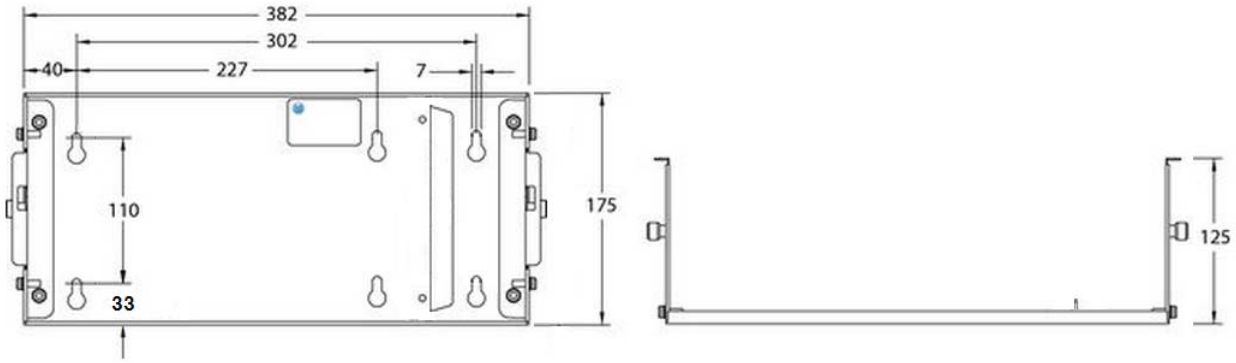




## 1609-EXBAT Unit Dimensions

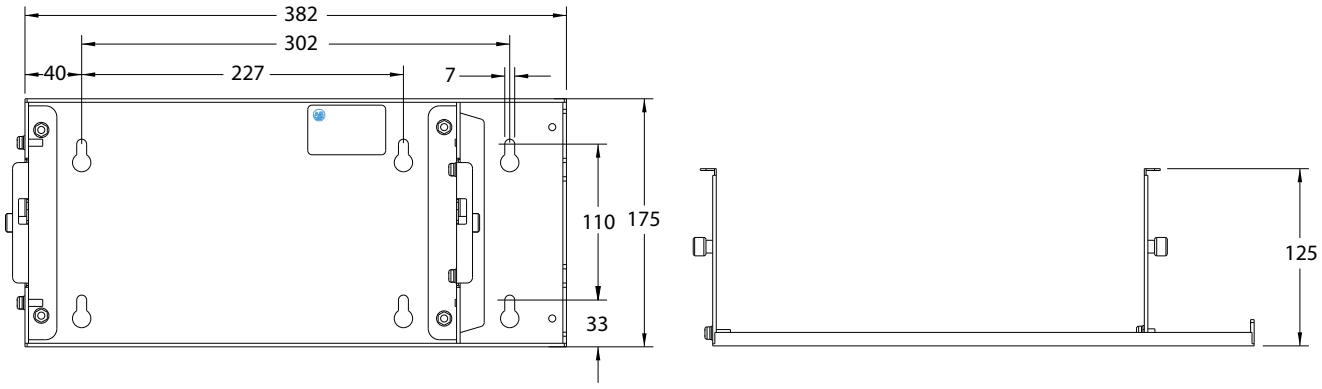


## 1609-BRK Dimensions (1609-D orientation)




## 1609-BRK Dimensions (1609-B orientation)



## Service Instructions

If the UPS requires service, do not return it to the distributor. Follow these steps:

1. Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from batteries.
2. When replacing batteries, replace with the same number of the 1609 battery packs supplied by Rockwell Automation.

**WARNING:** Do not dispose of battery in a fire. The battery may explode. Do not open or mutilate the battery or batteries. Released electrolytes are harmful to the skin and eyes. It may be toxic. A battery can present a risk of electrical shock and high short circuit current.

3. Review the problems discussed in the Troubleshooting section of this manual to eliminate common problems.
4. If the problem persists, contact Rockwell Automation Customer Support at 440-646-5800.
5. Pack the UPS in its original packaging.
   - Pack the UPS properly to avoid damage in transit. Never use Styrofoam beads for packaging.
   - Damage sustained in transit is not covered under warranty.

**ATTENTION:** Always disconnect the battery(s) before shipping, in compliance with U.S. Department of Transportation (DOT) and IATA regulations. The battery(s) may remain in the UPS.

The following precautions should be observed when working on batteries:

- Remove watches, rings, or other metal objects.
- Use tools with insulated handles.
- Do not lay tools or metal parts on top of batteries.
- Determine if battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance.

## Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At http://www.rockwellautomation.com/support, you can find technical manuals, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools. You can also visit our Knowledgebase at http://www.rockwellautomation.com/knowledgebase for FAQs, technical information, support chat and forums, software updates, and to sign up for product notification updates.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect$^{SM}$ support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://www.rockwellautomation.com/support/.

### Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

| | |
|---|---|
| United States or Canada | 1.440.646.3434 |
| Outside United States or Canada | Use the Worldwide Locator at http://www.rockwellautomation.com/support/americas/phone_en.html, or contact your local Rockwell Automation representative. |

### New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

| | |
|---|---|
| United States | Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process. |
| Outside United States | Please contact your local Rockwell Automation representative for the return procedure. |

## Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete this form, publication RA-DU002, available at http://www.rockwellautomation.com/literature/.

**www.rockwellautomation.com**

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Publication 1609-UM009C-EN-P - February 2015