



RT Series Rackmount User Manual

For use with 400VA and 600VA



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IMPORTANT NOTICE ON BATTERY WARRANTY

The warranty policies stated in Sections 1 and 8 are not valid for applications in which the UPM is regularly and intentionally disconnected from AC mains power. AMETEK Powervar's two year battery warranty applies only to products that are properly installed and consistently connected to AC mains power, except during utility outages.

Products regularly and intentionally disconnected from AC mains power will experience substantially reduced battery life. Notwithstanding the stated warranty in Sections 1 and 8. AMETEK Powervar's standard warranty term does not apply in these cases and is supplanted by a 90 day warranty from time of shipment from AMETEK Powervar. The warranty provided by AMETEK Powervar provides for the replacement of the battery or battery systems in the event that the batteries do not meet performance specifications as determined by AMETEK Powervar exclusively.



DANGER

Danger- The danger symbol is used to indicate imminently hazardous situations, locations, and conditions which, if not avoided, **WILL** result in death, serious injury, and/or severe property damage.



CAUTION

Caution- The caution symbol is used to indicate potentially hazardous situations and conditions which, if not avoided, may result in injury. Equipment damage may also occur.



WARNING

Warning- The warning symbol is used to indicate potentially hazardous situations and conditions which, if not avoided, **COULD** result in serious injury or death. Severe property damage **COULD** also occur.



ATTENTION

Attention- The attention symbol is used to indicate situations and conditions that can cause operator injury and/or equipment damage.

Other warning symbols may appear along with the Danger and Caution symbol and are used to specify special hazards. These warnings describe particular areas where special care and/or procedures are required in order to prevent serious injury and possible death.



Electrical warnings- The electrical warning symbol is a lightning bolt mark enclosed in a triangle. The electrical warning symbol is used to indicate high voltage locations and conditions may cause serious injury or death.



Explosion warnings- The explosion warning symbol is an explosion mark enclosed in a triangle. The explosion warning symbol is used to indicate locations and conditions where molten, exploding parts may cause serious injury or death if the proper precautions are not observed.

1.0 INTRODUCTION

Thank You

Thank you for your purchase of this power conditioning solution. Our broad family of power quality solutions are designed to protect sensitive electronic systems from the destruction, degradation, and disruption caused by electrical power disturbances.

This product you have purchased is the most advanced solution available today. It protects and provides clean power to your system. We've prepared this document to help familiarize you with the functions and controls of this product. If, after reviewing this manual, you have any questions at all, please feel free to contact our technical support team by phone (1-800-369-7179) or email us at rma.powervar@ametek.com.

Registering your AMETEK Powervar Product

Please take a few moments to register your product purchase.

Registration is easy and quick via the product registration page found on our website at www.powervar.com.

General

The AMETEK Powervar RT Series UPM systems are the most advanced, line interactive, true sinewave UPS products available for your application. Each model is designed to provide total protection for your system from a complete range of power quality problems. RT Series UPM systems will protect your installation from normal mode voltage impulses, electrical noise, sags and surges, brownouts, and blackouts. Each RT Series contains a low impedance isolation transformer, it eliminates common-mode (neutral-to-ground) voltages that are a constant threat to the reliable operation of microprocessor-based systems. When AC power is present, RT Series constantly alters and conditions the supplied power. When AC power fails, the RT Series uses its internal, maintenance-free battery to supply reserved power to your computer system. Regardless of whether or not commercial power is present, the RT Series is constantly on the job, ensuring a fully conditioned, safely managed interface between your system and the electrical utility. Figure 1 illustrates the basic operation of the RT Series.

Figure 1

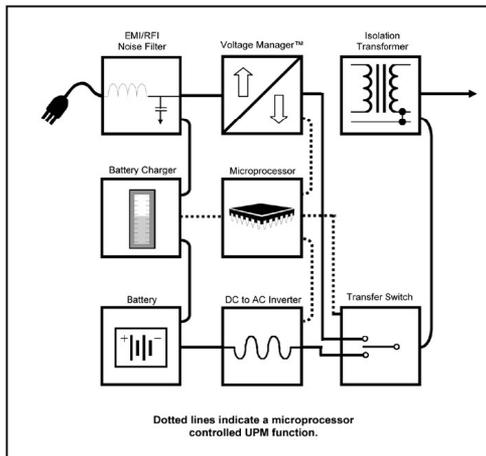


Figure 1 – Basic Operation of
Security One UPM

Sinewave Output

The output voltage of all RT Series models are True Sinewave – the kind that the utility company provides to the wall outlet and the kind that your equipment is designed to work with. This provides guaranteed compatibility even with the most sensitive electronic loads.

Voltage Manager

The voltage of the AC power source can often fluctuate from its nominal rating. These deviations in line voltage are tolerated quite well by most switch mode power supplies (the type used in your computer system). However, some UPS products may misinterpret these transient changes in line voltage as a power outage and erroneous battery operation may occur. This type of activity results in unnecessary strain on the battery and may eventually shorten its life. AMETEK Powervar's RT Series products feature Voltage Manager – a circuit that constantly monitors the AC source. If minor changes in AC voltage occur, the Voltage Manager adjusts the output voltage so that erroneous inverter operations are avoided. Ensuring that the RT Series switches to its batteries only in the event of a true power outage, results in longer battery life and a lower cost for both maintenance and ownership.

Start Manager

Start Manager is special circuitry that enables the internal batteries and allows you to start the RT Series from either the main AC supply or from its own internal battery. On occasion, AC power may not be available – such as when installing a system in a location where the electrical wiring has not been completed. Start Manager allows you to start the RT and its connected system to perform final tests on both the RT and the computer systems it's powering.

MopUPS Express

Many uninterruptible power systems provide only a basic software interface with the computer system they protect. MopUPS Express combines the signaling capabilities of the RT Series rear panel communication port with the management capabilities of AMETEK

Powervar's communication software suite. Using your computer's monitor, MopUPS Express conveniently displays input and output voltage, output current, power line frequency, battery voltage, load percentage, and temperature. MopUPS Express even initiates user defined automatic system shutdowns during extended power outages. MopUPS Express allows a system operator to locally or remotely control the shutdown and startup of equipment connected to the RT Series and provides this control either directly or through the operation of a customized schedule that can be developed to meet specific operating requirements

User Replaceable Battery

Eventually every RT requires new batteries. AMETEK Powervar expects the battery in your RT Series to last a minimum of two years – perhaps longer if power outages are short and infrequent. The RT Series makes battery replacement by the user fast and easy. It is not necessary to turn off the RT or the connected system. The RT Series allows the battery to be replaced while the system is running.

2.0 SAFETY INSTRUCTIONS

IMPORTANT - SAVE THESE INSTRUCTIONS

**THIS MANUAL CONTAINS IMPORTANT SAFETY INSTRUCTIONS.
KEEP THIS MANUAL HANDY FOR REFERENCE.**



CAUTION

A battery can present a risk of electrical shock. Short-circuit currents can be extremely high and can create severe burns as well as the risk of fire or explosion from vented gases. Always observe proper precautions. When replacing batteries, use the same quantity, rating and type of batteries used by AMETEK Powervar. The batteries used in this RT Series are sealed lead-acid and are maintenance free. Proper disposal of batteries is required. Refer to your local codes for disposal of batteries.



CAUTION

- This RT contains voltages which are potentially hazardous. All repairs should be performed by qualified service personnel.
- To reduce the risk of fire, connect only to a circuit provided with 20 amperes maximum branch circuit over-current protection in accordance with the National Electric Code, ANSI/NFPA 70.
- The RT has its own internal energy source (battery). The output receptacles of the RT may be live even when the RT is not connected to an AC Supply.

Safe and continuous operation of the RT depends partially on the care taken by users. Please observe the following precautions. (Not following these could result in warranty being voided).

NOTE:

- Do not disassemble the RT.
 - Do not attempt to power the RT from any receptacle except a properly grounded receptacle that matches the input plug provided with the RT.
 - Do not place the RT near liquid or in environments of excessive humidity.
 - Do not allow liquid or any foreign object to get inside the RT.
 - Do not block air vents on the side of the RT.
 - Do not plug appliances such as hair dryers, fans, heaters, etc. into the RT.
 - Do not place the RT under direct sunshine or close to heat emitting sources (excessively warm temperatures will shorten battery life)
 - This RT is intended for installation in a temperature controlled, indoor area free of conductive contaminants.
 - The AC power supply for the RT should be conveniently near the RT and easily accessible – avoid extension cords or temporary power strips to power the RT. • The total leakage current of the RT and consumer connected equipment should not exceed 3.5 mA.
 - Not for use in a computer room as defined in the Standard for the Protection of Electronic Computer/Data Processing Equipment, ANSI/NFPA 75.
 - The socket-outlet shall be installed near the equipment and shall be easily accessible.
 - The battery should be disconnected from the RT by unplugging at its quick connectors when maintenance or service work inside the RT is necessary.
 - Do not dispose of batteries in a fire – batteries may explode.
 - Do not open or mutilate batteries. Doing so may release electrolyte or other toxic substances, which may be harmful to the skin, eyes, or the environment. A battery can present a risk of electric shock and high short circuit current. The following precautions should be observed when working with batteries:
 - Remove watches, rings, or any other metal jewelry or objects which may make contact with the battery.
 - Use tools with insulated handles.
-



CAUTION

Risk of Energy Hazard, 12 V, 24W battery for ABCEG401. Before replacing batteries, remove conductive jewelry such as chains, wrist watches, and rings. High energy through conductive materials could cause severe burns.



CAUTION

Risk of Energy Hazard, 24 V, 24W battery for ABCEG601. Before replacing batteries, remove conductive jewelry such as chains, wrist watches, and rings. High energy through conductive materials could cause severe burns.

FFC Issues



ATTENTION

Attention This equipment has been tested and found to comply with the limits for a Class A digital devices pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in both residential and commercial environments.

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio and/or television reception, which can be determined by turning the RT equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the RT and the receiver.
- Connect the RT into an outlet on a circuit that is different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for assistance.

3.0 INSTALLATION

This section explains:

- Equipment inspection
- Unpacking the unit
- Checking the accessory kit
- Cabinet installation
- Initial startup

Inspecting the Equipment

If any equipment has been damaged during shipment, keep the shipping cartons and packing materials for the carrier or place of purchase and file a claim for shipping damage:

1. File with the carrier within 15 days of receipt of the equipment;
2. Send a copy of the damage claim within 15 days to your service representative.

NOTE:

Check the battery recharge date on the shipping carton label. If the date has passed and the batteries were never recharged, do not use the RT. Contact your service representative.

Unpacking the Cabinet



CAUTION

- Unpacking the unit in a low-temperature environment may cause condensation to occur in and on the unit. Do not install the unit until the inside and outside of the unit are absolutely dry (hazard of electric shock).
 - The unit is heavy. Use caution to unpack and move the unit.
-

Use care when moving and opening the carton. Leave the components packaged until ready to install.

To unpack the unit and accessories:

1. Open the outer carton and remove the accessories packaged with the unit.
2. Carefully lift the unit out of the outer carton.
3. Discard or recycle the packaging in a responsible manner, or store it for future use.

Place the unit in a protected area that has adequate airflow and is free of humidity, flammable gas, and corrosion

NOTE:

Before installation, please read and understand the following instructions. Carefully examine the carton for damage. Notify the carrier immediately if damage is observed. Be sure to save the carton should you ever need to ship the RT for repair or maintenance.

Placement

This RT is intended for indoor use only. Although your RT is very



rugged, its internal components are not sealed from the environment. The RT must be installed in a protected environment away from heat producing appliances such as furnaces, radiators, and heaters. Protect the RT from exposure to dripping or standing water and high humidity or condensing air conditions. The location should provide adequate airflow around the RT.

Provide a minimum 1" clearance on all sides for proper ventilation.

Applying Power to the UPM

Connect the power cord to a verified grounded 3 wire receptacle. Verify that the Site Wiring Fault LED is off. Once connected, the RT's internal electronics are energized, including the battery plugs. The output remains off until the on/off switch is held for more than 3 seconds.

Operational Tests

Observe the front panel of the RT. The following table shows how the front panel LED should appear upon start-up with output.

| Indicator | Load Monitor LED's | Voltage Manager Normal | Battery LED  | Over Temperature LED | Fault LED  |
|-----------|--------------------|------------------------|--|----------------------|--|
| Status | Off | On | Off | Off | Off |

NOTE:

Connect battery plugs, depending on the charge state of the battery, it is possible that the battery LED may be flashing (this is normal).

With the connected equipment powered off, perform an initial test of the UPM backup function by pressing the Test/Silence button on the front panel. During this test, the Battery LED on the front panel should briefly illuminate. It is also possible to test the backup function by unplugging the RT input power cord. If you choose to test the RT in this manner, you will note that the RT will beep every few seconds while the power cord is unplugged. The Battery LED will also illuminate constantly.

Once you have performed an initial test of the RT backup function, turn on the connected computer equipment. Verify that the unit is not overloaded. If the unit is overloaded all load LED's will flash the fault LED will flash then, remove the least critical devices from the RT one by one until the overload LED's are extinguished. With the connected loads powered up, perform the backup test once again by pressing the Test/Silence button or unplugging the RT. When this final test is completed, the RT will be ready to use.

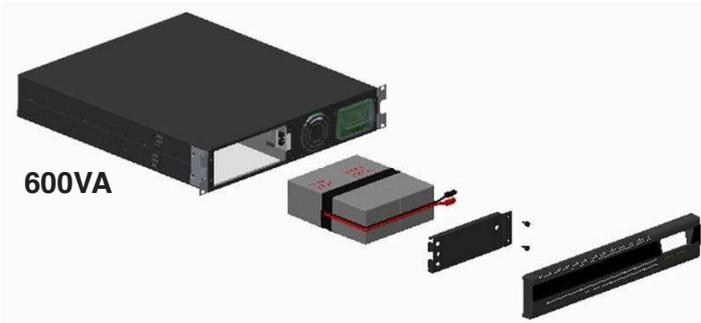
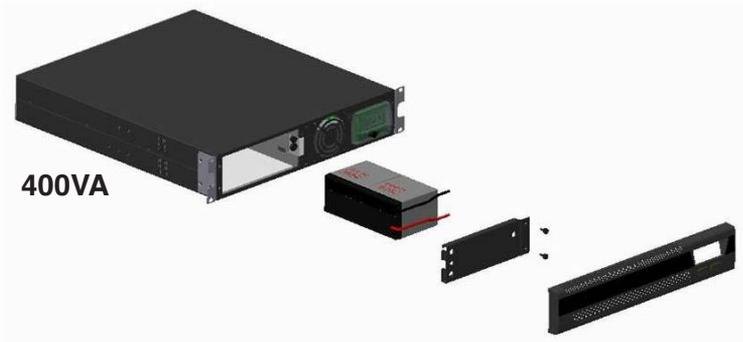
NOTE:

- If you leave your RT on continuously, it is a good idea to perform a test at least once a month.
 - If you are utilizing MopUPS Express software, you can configure the system to automatically self-test periodically.
 - The RT is shipped with a charged battery, but some discharge naturally occurs during storage and shipment. You may use the RT immediately, but you should realize that backup time may be less than the stated rating until the RT battery has had at least six hours to charge.
 - AMETEK Powervar recommends that you do not plug laser printers into the RT. Laser printers are known to draw large amounts of current when the fuser/heater assembly is energized. Laser printers can easily overload the RT or create a low voltage condition that can interfere with the operation of the Voltage Manager circuit.
-

4.0 OPERATION

NOTE:

In order to operate the RT backup, you must first connect the internal battery behind the front panel of the RT.



On/Off Button

The On/Off button is a dual function control:

- When the AC power is present to the RT input, pressing the On/Off button for more than 3 seconds will turn the RT output on.
- Pressing the On/Off button for more than 3 seconds will turn off the RT output, if off.

Test/Silence Button

The Test/Silence button is a dual function control:

- Pressing the (Test/Silence) button for 5 seconds when AC power is present and battery pack is connected, the RT will enter a self test mode in which it tests both battery and inverter for a few seconds before returning to the AC. We recommend you close all open file before initiating self-test.
- When AC power fails, the RT will transition to inverter mode and alerts you with an audible alarm. The (Test/Silence) button is used to silence the alarm. When battery power begins to run low, the audible alarm will automatically return and beep at a faster rate.

AC Mode Load Monitor

The Load Monitor is a 4-segment LED display that shows the current load percentage. All the LED's each indicate approximately 25% load.

DC Mode Battery Monitor

In the DC mode, the LEDs indicate charge level. Each LED indicates approximately 25% charge.

Status Monitor

The status monitor is a row of four individual LED's that each indicate the status of a part of your RT system. The first three LED s work with the RT Series Voltage Manager. All three LED's are explained in the following table.

| FLT  | PWR  | BAT  | UNIT STATUS |
|--|--|--|-----------------------------------|
| ○ | ○ | ○ | OFF |
| ○ | ● | ○ | ON AC Power - Battery Charging |
|  | ● |  | ON AC Power - No Battery Detected |
| ● | ● |  | ON AC Power - Replace Battery |
|  |  | ○ | ON AC Power - Output Overload |
| ○ |  | ● | On Battery Power |
| ○ |  |  | On Battery Power - Low Battery |
|  | ○ | ○ | OFF - Due to Output Overload |
| ● | ○ | ○ | Unit Requires Service |

 = Flashing ○ = Off ● = On

Site Wiring Fault Indicator – (North American Versions Only)

A red Site Wiring Fault LED is located on the rear panel of the RT. This LED is designed to illuminate if the RT is connected to an improperly wired AC receptacle. This indicator is designed to indicate a missing safety ground wire or a reversal of phase and neutral wires. This indicator should be visually checked during installation and, if illuminated, you should contact a qualified electrician immediately.

NOTE:

Do not operate the RT if the Site Wiring Fault LED is illuminated. When lit, the LED is indicating a wiring condition, which may represent a hazard of fire or electrocution. In addition, improper wiring may create reliability problems for both the RT and the connected system. Never use a 3-blade to 2-blade adapter (often called a “cheater”) with the RT. These devices remove the safety ground connection to the RT and will cause the Site Wiring Fault LED to illuminate.

MopUPS Express Port

MopUPS Express provides a connection point on the rear panel of the RT (USB ports). Connecting to this port and installing MopUPS Express's software package (optional), will allow you control over important RT functions and access to operating information from the RT. Using MopUPS Express's software, you can view such parameters as AC input and output voltage, power line frequency, and battery voltage. The following table illustrates the available parameters.

- Broadcast warnings of power failures/timed shutdowns
- Automatic closure of files prior to battery exhaustion
- Power down of the RT and connected equipment

To support these functions without the MopUPS Express software suite, you will need to either buy or build your own special cable. The following table describes the pin assignment of the RJ11 connector on the rear of the RT. Contact your computer supplier to determine the connection configuration and connector style necessary to attach the cable to the computer.

| RJ11 Pin | Signal | Polarity/Function |
|----------|-------------------|---|
| 1 | Low Battery (Out) | Low (ON) when battery has less than 2 minutes remaining run time |
| 2 | AC Fail (Out) | When unit is on battery |
| 3 | No Connect | |
| 4 | No Connect | |
| 5 | Shutdown Inverter | Shutdown UPS (with 10 second delay) when signal is High (present) for more than 3 seconds and UPS is on Battery |
| 6 | Common | Common (emitter) for other three signals |

NOTE:

1. Pins 1 and 2 are open collector outputs, which must be pulled up to a common referenced supply. Switch rating: +40V, 0.15A non-inductive.
2. Pin 6 should only be connected to ground. Pin 6 is the reference for pin 1, pin 2 and pin 5.

NOTE:

You may, of course, connect your computer to the RT without using MopUPS Express. When power is lost, the RT will beep and you will have to manually shut down the computer and RT.

Start Manager

When AC power is not available, such as in a new installation where wiring may be incomplete, you can still start the RT to test its operation and the operation of your system using Start Manager. With the RT off, follow these simple steps:

1. Disconnect the input AC power cable from the AC mains.
2. Ensure that the batteries are connected behind the front panel.
3. Press and hold the On/Off switch on the front panel until the UPM beeps.
4. The RT is now running on battery. When you have finished, press the On/Off switch again. Plug the input AC power cable into the rear panel of the RT.

5.0 MAINTENANCE

Storage

The RT may be stored for extended periods in an environment that does not subject the RT to extremes of temperature or humidity. When storing for extended periods, the battery should be disconnected. If the storage location is characterized by above normal temperature, the battery should be recharged every two months. The RT does not need to be turned on for charging to occur – it only needs to be plugged in.

NOTE:

This product is not designed for continuous use on batteries.

IMPORTANT INFORMATION

The batteries inside this RT are a special type called “sealed lead-acid”. These batteries use a non-liquid electrolyte, which makes it possible to use them in any physical orientation. The batteries are designed to last from two to five years. Their actual life span will depend on several factors including how often power outages occur, how long power outages last, and the temperature of the environment in which the RT operates. Frequent, long duration power outages will shorten battery life more than infrequent, short duration outages. Consistent high temperatures in the area where the RT is used will also shorten battery life.

The RT is equipped with a Low/Replace Battery LED on the front panel. If the LED illuminates, you should make sure that the battery has at least six hours to charge without a power interruption. Inadequate (much shorter than usual) backup time, premature low battery alarm sounds, and persistent Low/Replace Battery LED illumination are all good signs that the batteries inside your RT requires replacement. The batteries inside your RT are designed to be easily replaced by a user who possesses basic mechanical/electrical knowledge and simple

tools. Please familiarize yourself with the following precautions before proceeding with battery replacement.



WARNING

Servicing of batteries should always be performed or supervised by someone who has read and understood the following precautions and who understands the hazards associated with storage batteries. This procedure should not be performed by someone who is unauthorized or who is incapable of following these precautions.



CAUTION

-
- Only the battery assembly in this unit is user serviceable. The battery compartment is accessed by removing the front panel as described in the following instructions. No other user serviceable parts are contained in this RT. Do not remove any cover other than the front battery access panels.
 - A battery (even a depleted one) can deliver very high currents when short-circuited. There is a danger of electrical shock. Remove all watches, rings, bracelets or other metal objects. Use only tools with insulated handles.
 - Do not dispose of batteries in a fire. There is a danger of explosion.
 - Do not dispose of batteries in an environmentally unfriendly manner. Batteries may be returned to AMETEK Powervar for proper disposal.
 - Do not open or mutilate the batteries. This may release electrolyte that is toxic to the environment and harmful to the skin and eyes.
 - Replacement batteries may be ordered from AMETEK Powervar by phone or via our website at www.powervar.com. If purchasing batteries from another source, be sure to use the same type and quantity of batteries.

User Replaceable Battery

NOTE:

Changing the batteries in this RT series is designed to be a safe and simple procedure. Batteries may be replaced while the RT is on AC mode and providing power to the connected load. You should remember, however, that if a power outage occurs after the old batteries are disconnected and before the new batteries are installed, power will be lost to your connected system and components.



CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY INCORRECT TYPE

When replacing batteries, replace with the same number of the following battery.

| Brand | Type | Rating |
|----------|----------|--------|
| Powervar | 52823-01 | 401 |
| Powervar | 52863-01 | 601 |



CAUTION

Risk of Energy Hazard, 12V, maximum 8.5 Ampere-hour battery. Before replacing batteries, remove conductive jewelry such as chains, wrist watches, and rings. High energy through conductive materials could cause severe burns.



CAUTION

Do not dispose of batteries in a fire. The batteries may explode.



CAUTION

Do not open or mutilate batteries. Released material is harmful to the skin and eyes. It may be toxic.

NOTE:

If you have read and understood the cautions preceding this section, you may proceed with the following steps. Consult Figures 2 & 3 to assist you in the following battery replacement procedure.

Battery Replacement

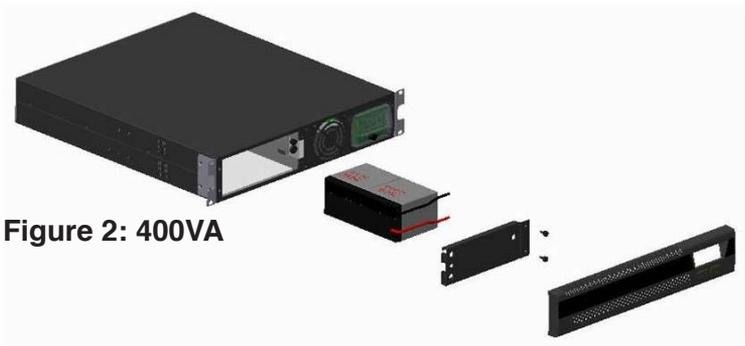


Figure 2: 400VA

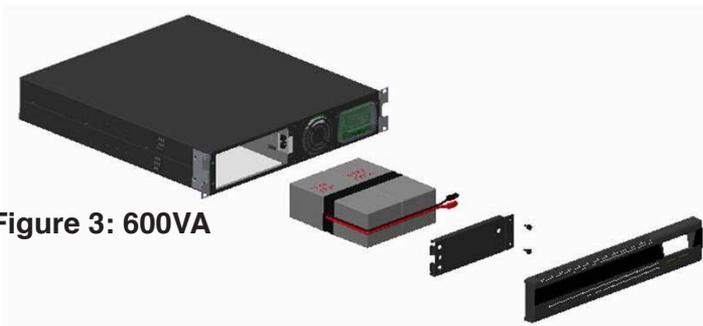
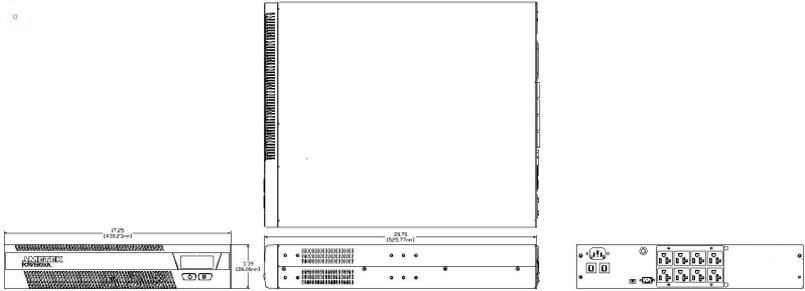


Figure 3: 600VA

6.0 SPECIFICATIONS

Uninterruptible Power Managers Specifications North American - Models ABCE401-11R



| | ABCE401-11R 52043-01R |
|--|----------------------------------|
| Type | RT SERIES RACKMOUNT |
| Power Rating (VA/Watts) | 400/320 |
| Inverter Waveform | Low Distortion Sine Wave |
| Transfer Time | 7 ms. Typical |
| Frequency | 60 Hz. |
| BTU/Hr. | 177 |
| T.H.D. w/100% Resistive Load | <3% on Battery |
| Online Efficiency (w/o Charger) | 87% |
| Input Voltage | 120 |
| Input Current | 4.16 Amps |
| Output Voltage | 120 |
| Output Current (VA/Watts) | 3.3 / 2.6 Amps |
| Input Voltage Range (w/o Using Battery) | 85 to 156 Volts |
| Output Regulation (Mains) | ± 10% |
| Output Regulation (On Battery) | ± 5% |
| Backup Time at Full Load | > 5 Minutes |
| Communications Interface | RJ11, USB |
| Shipping Weight (lbs.) | 35 |

Uninterruptible Power Managers Specifications

North American - Models ABCE401-11R

| | |
|---|--|
| <p>Front Panel Controls</p> <ul style="list-style-type: none"> • Power On/Off • Test • Load Level LED Gauge • Battery Charge LED Gauge • Voltage Manager Nominal LED • On Battery LED • Fault LED <p>Rear Panel Information and Controls</p> <ul style="list-style-type: none"> • 6 Foot Power Cord with NEMA 5-15P Plug • Four (8) NEMA 5-20R Receptacles • Communications Manager RJ11 Port, USB Port • Site Wiring Fault LED • Circuit Breaker <p>Internal Batteries</p> <ul style="list-style-type: none"> • User Hot-Swappable (See Instruction Manual) • Type: 12 Volt, 9AH • Quantity: 1 Battery • Recharge Time: 6 to 10 Hours to 90%, 24 Hours to Full Charge <p>Environmental</p> <ul style="list-style-type: none"> • Temperature: 0 - +40C (32 - 104°F) Operating -20 to +60°C (-40 to 140°F) Shipment/Storage • Humidity: 5 to 90% Non-Condensing (Operating, Shipment/Storage) • Altitude: 2,000m (6,500 ft) max. Operating; 15,000m (49,000 ft) max. Shipment/Storage | <p>Safety Agency and EMC Compliance: All Units are Listed by UL and Marked with the UL/cUL Marking</p> <p>Standard UPM: Products Listed to:</p> <ul style="list-style-type: none"> • UL1778 4th Edition • CSA 22.2 Nos. 107-1 <p>Products in Compliance with:</p> <ul style="list-style-type: none"> • FCC-Part 15, Subpart B, Sections 15.107b & 15.109b Class A Digital Device* • CISPR11:2009, A1; 2010, Class A* • IEC61000-4-2, Electrostatic Discharge • IEC61000-4-3, Radiated Electromagnetic Field Immunity • IEC61000-4-4, Electrical Fast Transient/Burst Immunity • IEC61000-4-5, Surge Immunity • IEC61000-4-6, Immunity to Conducted Radio Frequency Disturbances • IEC61000-4-8, Power Frequency Magnetic Field Immunity • IEC61000-4-11, Voltage Dips, Short Interruptions and Voltage Variations <p>RoHS Compliance: All products (Standard and Medical) are RoHS Compliant</p> |
|---|--|

NOISE REJECTION-ISOLATION: With unit under power and an ANSI/IEEE C62.41Cat. A pulse applied either normal or common mode at the input, the noise output voltage will be less than 10V normal mode and less than 0.5V common mode in all four quadrants (CM-NM, NM-NM, CM-CM, NM-COM).

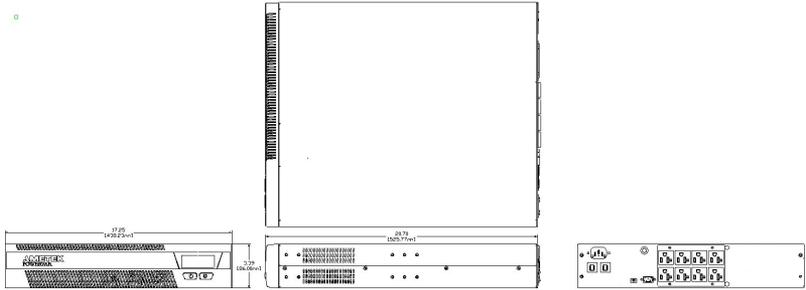
SURGE VOLTAGE WITHSTAND CAPABILITY: Tested under power to ANSI/IEEE C62.41 Cat. A & B (formerly IEEE587-1980). CAT. A - 6000V @ 200 amps, 0.5 usec risetime, 100 kHz decay, Cat. B - 6000V @ 500 amps, 0.5 usec risetime, 100 kHz decay.

Warranty/Support: AMETEK Powervar warrants the electronics and transformers used in its uninterruptible power managers to be free from defects in materials and workmanship for a period of five years from the date of shipment. Batteries are warranted for a period of two years from the date of shipment. For service or support on any AMETEK Powervar product, please contact AMETEK Powervar Technical Support at (800) 369-7179 or visit the AMETEK Powervar website at www.powervar.com.

Battery Life Disclaimer: AMETEK Powervar's standard battery warranty applies only to UPM products which are continuously connected to AC mains power, except during utility power outages. Products which are regularly and intentionally disconnected from AC mains power will experience battery discharge/charge cycles potentially far more numerous than those for which the battery was designed. As a result, products used in such applications will experience substantially reduced battery life. For that reason, AMETEK Powervar's standard battery warranty does not apply for applications in which the UPM product is regularly and intentionally disconnected from AC mains power. AMETEK Powervar UPM products used in such applications shall receive a 90 day warranty on batteries.

Uninterruptible Power Managers Specifications

North American - Models ABCE601-11R



| | ABCE601-11R 52063-01R |
|--|----------------------------------|
| Type | RT SERIES RACKMOUNT |
| Power Rating (VA/Watts) | 600/480 |
| Inverter Waveform | Low Distortion Sine Wave |
| Transfer Time | 7 ms. Typical |
| Frequency | 60 Hz. |
| BTU/Hr. | 184 |
| T.H.D. w/100% Resistive Load | <3% on Battery |
| Online Efficiency (w/o Charger) | 91% |
| Input Voltage | 120 |
| Input Current | 6.25 Amps |
| Output Voltage | 120 |
| Output Current (VA/Watts) | 5.0 / 4.0 Amps |
| Input Voltage Range (w/o Using Battery) | 85 to 156 Volts |
| Output Regulation (Mains) | ± 10% |
| Output Regulation (On Battery) | ± 5% |
| Backup Time at Full Load | > 5 Minutes |
| Communications Interface | RJ11, USB |
| Shipping Weight (lbs.) | 38 |

Uninterruptible Power Managers Specifications

North American - Models ABCE601-11R

| | |
|---|--|
| <p>Front Panel Controls</p> <ul style="list-style-type: none"> • Power On/Off • Test • Load Level LED Gauge • Battery Charge LED Gauge • Voltage Manager Nominal LED • On Battery LED • Fault LED <p>Rear Panel Information and Controls</p> <ul style="list-style-type: none"> • 6 Foot Power Cord with NEMA 5-15P Plug • Four (8) NEMA 5-20R Receptacles • Communications Manager RJ11 Port, USB Port • Site Wiring Fault LED • Circuit Breaker <p>Internal Batteries</p> <ul style="list-style-type: none"> • User Hot-Swappable (See Instruction Manual) • Type: 12 Volt, 9AH • Quantity: 1 Battery • Recharge Time: 6 to 10 Hours to 90%, 24 Hours to Full Charge <p>Environmental</p> <ul style="list-style-type: none"> • Temperature: 0 - +40C (32 - 104°F) Operating -20 to +60°C (-40 to 140°F) Shipment/Storage • Humidity: 5 to 90% Non-Condensing (Operating, Shipment/Storage) • Altitude: 2,000m (6,500 ft) max. Operating; 15,000m (49,000 ft) max. Shipment/Storage | <p>Safety Agency and EMC Compliance: All Units are Listed by UL and Marked with the UL/cUL Marking</p> <p>Standard UPM: Products Listed to:</p> <ul style="list-style-type: none"> • UL1778 4th Edition • CSA 22.2 Nos. 107-1 <p>Products in Compliance with:</p> <ul style="list-style-type: none"> • FCC-Part 15, Subpart B, Sections 15.107b & 15.109b Class A Digital Device* • CISPR11:2009, A1; 2010, Class A* • IEC61000-4-2, Electrostatic Discharge • IEC61000-4-3, Radiated Electromagnetic Field Immunity • IEC61000-4-4, Electrical Fast Transient/Burst Immunity • IEC61000-4-5, Surge Immunity • IEC61000-4-6, Immunity to Conducted Radio Frequency Disturbances • IEC61000-4-8, Power Frequency Magnetic Field Immunity • IEC61000-4-11, Voltage Dips, Short Interruptions and Voltage Variations <p>RoHS Compliance: All products (Standard and Medical) are RoHS Compliant</p> |
|---|--|

NOISE REJECTION-ISOLATION: With unit under power and an ANSI/IEEE C62.41Cat. A pulse applied either normal or common mode at the input, the noise output voltage will be less than 10V normal mode and less than 0.5V common mode in all four quadrants (CM-NM, NM-NM, CM-CM, NM-COM).

SURGE VOLTAGE WITHSTAND CAPABILITY: Tested under power to ANSI/IEEE C62.41 Cat. A & B (formerly IEEE587-1980). CAT. A - 6000V @ 200 amps, 0.5 usec risetime, 100 kHz decay, Cat. B - 6000V @ 500 amps, 0.5 usec risetime, 100 kHz decay.

Warranty/Support: AMETEK Powervar warrants the electronics and transformers used in its uninterruptible power managers to be free from defects in materials and workmanship for a period of five years from the date of shipment. Batteries are warranted for a period of two years from the date of shipment. For service or support on any AMETEK Powervar product, please contact AMETEK Powervar Technical Support at (800) 369-7179 or visit the AMETEK Powervar website at www.powervar.com.

Battery Life Disclaimer: AMETEK Powervar's standard battery warranty applies only to UPM products which are continuously connected to AC mains power, except during utility power outages. Products which are regularly and intentionally disconnected from AC mains power will experience battery discharge/charge cycles potentially far more numerous than those for which the battery was designed. As a result, products used in such applications will experience substantially reduced battery life. For that reason, AMETEK Powervar's standard battery warranty does not apply for applications in which the UPM product is regularly and intentionally disconnected from AC mains power. AMETEK Powervar UPM products used in such applications shall receive a 90 day warranty on batteries.

Noise Rejection and Isolation

With unit under power and an ANSI/IEEE C62.41 Category A impulse applied either normal mode or common-mode at the input, the noise output voltage will be less than 10 volts normal mode and 0.5 volts common-mode in all four quadrants (CM-NM, NM-NM, CM-CM, NM-CM)

Surge Voltage Withstand

Tested under power to ANSI/IEEE C62.41 Category A & B (formerly IEEE587-1980) - Category A 6000V/200A, 0.5 usec. risetime, 100 kHz decay, Category B 6000V/500A, 0.5 usec. risetime, 100 kHz decay.

Voltage Manager Operation

Boosts voltage when main drops to 90% of nominal. Bucks voltage when main rises to 110% of nominal.

Safety Agency Listings

North American models to UL1778. International models are UL and cUL listed. All models for international use carry the CE mark.

EMC Conformance

All Voltage Models: FCC Part 15 J Class A

International Voltage Models: FCC Part 15 J Class A

EN 55022 Class B/CISPR 22, EN 50091-2, IEC 61000-3-2

7.0 TROUBLESHOOTING

The troubleshooting information provided in this section should help you discover the cause of most commonly encountered difficulties. Before following the troubleshooting steps provided, be certain that you have verified the following items

- The RT should be plugged into a properly working outlet.
- The line voltage to the RT is within specified boundaries.
- The circuit breaker on the rear panel of the RT has been reset.
- The battery is connected to the RT.

| Problem | Possible Cause | Action you should take |
|---|--|---|
| RT does not power up and has no audible alarm | <ol style="list-style-type: none"> 1. On/Off Button not pressed long enough 2. No incoming line voltage or voltage too high or too low 3. RT input power cord is not plugged in 4. Rear panel circuit breaker is tripped | <ol style="list-style-type: none"> 1. Press and hold the On/Off switch for 3 seconds min. 2. Check wall socket and test for proper line voltage 3. Plug in input power cord 4. Reduce load and reset circuit breaker |
| RT Overload LED's are illuminated and continuous audible alarm sounds | RT is overload | Reduce load by removing the least critical load items from the UPM output |
| Low/Replace Battery LED is illuminated | Battery voltage is too low or battery is dead | Recharge battery for at least six hours and reset RT. If LED is still illuminated, replace the battery. |
| Site Wiring Fault LED is illuminated | Site wiring problem | Contact a qualified electrician to verify wiring at this site |
| Backup time is less than expected | Battery is not fully charged or batter is dead | Recharge battery for at least eight hours and retest back up time |
| RT is normal, but the computer will not turn on | Computer input power cord is loose or not connected | Connect the power input power cord |
| MopUPS Express is not working | <ol style="list-style-type: none"> 1. Wrong interface cable 2. Computer's serial port has not been properly configured 3. Computer's I/O card is bad | <ol style="list-style-type: none"> 1. Purchase the correct cable 2. Check to see that the port is enabled in the CMOS settings. Also check for the IRQ conflicts. Make sure settings match those found in MopUPS Express 3. Replace I/O card |

Technical Support

In North America, AMETEK Powervar provides technical product support during our regular business hours of 8:00 a.m. to 5:00 p.m. Central Time. Between the hours of 5:00 p.m. and 8:00 a.m., our phone system will allow you to leave a message for our technical support department. The phone mail system also provides an emergency number to call in the event you should require immediate assistance. You may also communicate with our customer service/support department via fax or email. In North America, call toll free at (800) 369-7179. Our North American fax number is (847) 596-7100. In Europe, AMETEK Powervar provides technical support between 8:00 and 17:00 GMT. Contact our European headquarters at +44 (0) 1793-553980 or visit our website at www.powervar.com for more locations.

8.0 WARRANTY

AMETEK Powervar warrants its uninterruptible power managers or UPM (known hereafter as the “product”) to be free from defects in materials or workmanship for a period of five years from the date of shipment. AMETEK Powervar warrants the batteries used in the product to be free from defects in materials or workmanship for a period of two years from the date of shipment. The product will be repaired or (at AMETEK Powervar’s option) replaced at no charge during this warranty period. Product must be returned prepaid to the factory.

AMETEK Powervar makes no warranties, expressed or implied, of merchantability, fitness for a particular purpose, performance, condition, capacity or otherwise. AMETEK Powervar is not liable for incidental or consequential damages, monetary loss, loss of sales, or loss of business resulting from the failure or malfunction of the product. Warranty is void on any product that is misused, misapplied, abused, altered or repaired by any unauthorized personnel or where evidence of tampering exists. The foregoing constitutes the sole and exclusive remedy of the purchaser and is in lieu of all other warranties. No greater degree of liability is imposed on AMETEK Powervar.



Access additional product information and support on the web at www.powervar.com

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AMETEK Powervar



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