MARUSON®
TECHNOLOGY CORP.
Power Solutions All Your Needs

TACOMA TW LV SERIES
1kVA / 2kVA / 3kVA
Online Double-Conversion UPS
User Manual

Maruson Technology Corporation | www.marusonusa.com
Tel: +1.714.870.6888 | Toll-Free: +1.888.MARUSON (627.8766)
Technical Support: support@marusonusa.com
Hours of Operation: Monday – Friday, 9 AM to 5 PM (PT)

1. SAFETY INSTRUCTIONS

CAUTION: RISK OF ELECTRIC SHOCK, FIRE, AND INJURY TO PERSON. CAREFULLY READ THIS MANUAL BEFORE ATTEMPTING TO UNPACK, INSTALL, OPERATE, OR SERVICE THE PRODUCT AND ACCESSORIES AS THEY PERTAIN TO THE RISK OF FIRE, ELECTRIC SHOCK, OR SERIOUS INJURY TO PERSONS.

Retain these instructions as this manual includes crucial safety guidelines that must be adhered to in order to prevent fire, property damage, personal injury, or loss of life. It is important to note that the warnings, precautions, and instructions provided in this manual may not encompass all conceivable conditions and situations. The operator must recognize that common sense and caution are essential elements that cannot be inherently integrated into this product but need to be exercised by the operator. Disregarding these warnings may impact the warranty. Utilize this equipment only for its intended purpose, and entrust all repairs and maintenance to qualified service personnel exclusively.

1.1. PRE-INSTALLATION & ELECTRICAL SAFETY

- Always comply with both national and local electrical codes.
- For fire and electric shock prevention, install the UPS in a controlled indoor environment, avoiding exposure to direct sunlight, heat, corrosive gases, dust, and water.
- If the UPS has hardwired input, engage a licensed electrician to connect it to the branch circuit (mains), ensuring a grounded outlet connection.
- Ensure proper strain relief (not included) for all input and output hardwiring.
- Cover all openings providing access to UPS hardwire terminals for safety to prevent personal injury or equipment damage.
- Allow adequate space around the UPS and EBB for proper ventilation.
- Install an easily accessible protection circuit breaker upstream to disconnect the system from the AC power source.
- Connect the UPS to a mains power source protected against excess currents, short circuits, and earth faults.
- Ground the UPS input conductor to earth at the service equipment or the supply transformer if supplied by a separately derived system. Properly bond the UPS input ground conductor to protective earth at the service panel.
- This UPS receives power from more than one source-disconnection of AC source and the DC source is required to de-energize this unit before servicing.
- For PLUGGABLE EQUIPMENT, the socket-outlet shall be installed near the equipment and shall be easily accessible.
- Install the UPS near connected equipment for easy accessibility, avoiding busy areas where accidental knocking over may occur.
- Ensure cables to and from the UPS are positioned to prevent tripping or stepping hazards. Avoid allowing power supply cords to touch hot surfaces.
- Use only UL-, TUV-, or ETL-marked power cables to connect equipment to the UPS or as a mains cable to connect the UPS to an AC outlet.
- Never plug the UPS into itself to avoid damage, and always ensure the plug is fully inserted.
- If the mains input is hardwired, establish an earthing connection before connecting to the building wiring terminal.
- **CAUTION: Risk of electric shock.** When moving the UPS from a cold to a warm environment, ensure it is completely dry before installation and allow a minimum acclimatization time of two hours.
- **CAUTION: Risk of fire.** Use the correct size power cord (10AWG for 3KVA output wire and 12AWG for 2kVA output wire), 75°C copper wire, and apply 0.5Nm (4.4lb-in) torque force when connecting to the terminal block.
- **CAUTION: Risk of electric shock or fire.** Only connect the UPS to a circuit provided with recommended maximum branch circuit overcurrent protection with an ampere rating in accordance with the National Electrical Code® (NEC®), ANSI/NFPA 70, Canadian Electrical Code, Part 1, C22.1, or your national and local electrical code:

UPS	Branch Circuit	Circuit Breaker	Wiring	Wiring

Capacity	Breaker	Specification	AWG	mm2
1000VA	10A	125V, 16A, 2-pole	12AWG	3.33
2000VA	20A	125V, 30A, 2-pole	10AWG	5.26
3000VA	30A	125V, 40A, 2-pole	8AWG	8.37

- **CAUTION: Risk of electric shock.** Do not hardwire equipment to the 2kVA / 3kVA output terminal while the UPS is on or running off battery power. Always turn off power, unplug from power source, and ensure there is no voltage present before hardwiring the UPS or any equipment.
- **CAUTION: Risk of electric shock.** Verify all branch circuit (mains) and low voltage (control) circuits are de-energized and locked out before installing cables or making connections, whether in the junction box or to the UPS.
- **WARNING: Keep the product on level surfaces.** The product could become unstable and may tip over if stored or moved on an uneven surface, which may cause personal injury, death, or product damage.
- **WARNING: Do not use with high-risk activities such as nuclear, medical, life support equipment, or aquariums, or near water or in a damp environment.** Never use this UPS with life support equipment or any equipment where failure of this equipment can reasonably be expected to cause the failure of the life support equipment or to significantly affect its safety or effectiveness. Never use this UPS in the presence of a flammable anesthetic mixture with air, oxygen, or nitrous oxide.

1.2. OPERATION

- Never disconnect the ground conductor cable from the UPS or the building wiring terminals, as this action would negate the protective grounding of the entire UPS system and all connected equipment.
- This UPS is equipped with internal batteries and may retain live voltage even when disconnected from the branch circuit (mains).
- For safety reasons, refrain from disconnecting the mains cable or the building wiring socket (grounded shockproof socket) during operation, as it will sever the grounding for both the UPS and all connected loads.
- Ensure that the UPS remains safeguarded from liquid or foreign objects, and avoid installing it in proximity to water sources, including aquariums, or engaging in other high-risk activities.
- **CAUTION: Risk of electric shock or fire.** Avoid using extension cords or surge protectors with the UPS, and never plug the UPS input into itself. These actions may result in UPS damage, pose a fire hazard, cause overloads, or harm connected equipment.
- **CAUTION: Risk of suffocation, choking, physical injury, or electric shock.** Prevent individuals with reduced sensory, physical, or mental capacity, children, or pets from playing with or being left unattended with packaging material, plastic bags, batteries, UPS, or other small parts.

1.3. MAINTENANCE

- Only replace the fuse with one of the same type and amperage to prevent fire hazards.
- Prior to performing any service and/or maintenance, ensure the batteries are disconnected. Verify the absence of current and hazardous voltage in the capacitor or BUS capacitor terminals.
- **CAUTION: Risk of electric shock.** The UPS operates with hazardous voltages. Maintenance, repair, or battery replacement should be conducted solely by qualified personnel.
- **CAUTION: Risk of electric shock.** Even after disconnecting the UPS from the mains power supply (building wiring terminal), components inside the UPS remain connected to potentially hazardous battery power.
- **CAUTION: Risk of electric shock.** The battery circuit is not isolated from the input voltage, and hazardous voltage may be present between the battery terminals and the ground. Verify the absence of voltage before servicing.
- **WARNING: Electric energy hazard.** Do not attempt to modify any battery wiring or connectors, as such attempts can result in serious injury.

1.4. BATTERY SAFETY

- Only qualified personnel familiar with the necessary procedures and safety precautions should service or replace batteries.
- When replacing batteries, use the same type and number of batteries or battery packs, and ensure they are new.
- Check for inadvertent grounding of batteries and, if present, remove the source from the ground. Contact with any part of a grounded battery can result in electrical shock, and minimizing such risks is achieved by removing grounds during installation and maintenance (applicable to equipment and remote battery supplies lacking a grounded supply circuit).
- Misuse of batteries, such as overcharging or overheating, can lead to the discharge of battery electrolyte, which is harmful to the skin and eyes and may be toxic.
- If the UPS is defective, disconnect the internal battery before storing, disposing of, or transporting it.
- Proper disposal of batteries is essential. Contact your local battery recycling center or refer to local codes for disposal requirements.
- **WARNING: Never dispose of batteries in a fire.** They may explode when exposed to high heat or flame.
- **WARNING: Do not open or mutilate batteries.** Released electrolyte is harmful to the skin and eyes and may be toxic. In case of acid contact with the skin or eyes, flush with fresh water and seek medical attention immediately.
- **CAUTION: Risk of electric shock.** Batteries can present a risk of electrical shock and high short circuit current. The following precautions should always be observed when working on batteries:
    - Remove watches, rings, or other metal objects.
    - Use tools with insulated handles.
    - Wear rubber gloves and boots and eye protection.
    - Do not lay tools or metal parts on top of the UPS or battery terminals.
    - Disconnect charging source prior to connecting or disconnecting battery terminals.

1.5. ADDITIONAL PRECAUTIONS

- Any alterations or modifications to this unit not explicitly approved by Maruson may result in voiding the warranty.
- The UPS contains no user-serviceable parts. Refrain from conducting repairs or maintenance unless performed by an authorized service professional.
- The warranty does not cover instances of improper usage, operation, handling, tampering, misuse, abuse, lack of maintenance, or use of the UPS or connected equipment in a manner not specified in the user manual.

2. CONSIGNES DE SÉCURITÉ

ATTENTION : RISQUE D'ÉLECTROCUTION, D'INCENDIE ET DE BLESSURE. LISEZ ATTENTIVEMENT CE MANUEL AVANT D'ESSAYER DE DÉBALLER, D'INSTALLER, D'UTILISER OU DÉPANNER LE PRODUIT ET SES ACCESSOIRES, CAR ILS PRÉSENTENT DES RISQUES D'INCENDIE, D'ÉLECTROCUTION OU DE BLESSURES GRAVES.

Retenez ces instructions car ce manuel contient des directives de sécurité cruciales qui doivent être respectées afin d'éviter les incendies, les dégâts matériels, les blessures corporelles ou les pertes de vies humaines. Il est important de noter que les avertissements, les précautions et les instructions fournis dans ce manuel peuvent ne pas couvrir toutes les conditions et situations concevables. L'opérateur doit reconnaître que le bon sens et la prudence sont des éléments essentiels qui ne peuvent pas être intégrés de manière inhérente à ce produit, mais qui doivent être exercés par l'opérateur. Le non-respect de ces avertissements peut avoir une incidence sur la garantie. N'utilisez cet équipement que pour l'usage auquel il est destiné et confiez toutes les réparations et l'entretien exclusivement à un personnel qualifié.

2.1. PRÉ-INSTALLATION ET SÉCURITÉ ÉLECTRIQUE

- Respectez toujours les codes électriques nationaux et locaux.
- Pour prévenir les incendies et les électrocutions, installez l'onduleur dans un environnement intérieur contrôlé, en évitant de l'exposer à la lumière directe du soleil, à la chaleur, aux gaz corrosifs, à la poussière et à l'eau.
- Si l'onduleur est équipé d'une entrée câblée, faites appel à un électricien agréé pour le raccorder au circuit de branchement (alimentation), en veillant à la mise à la terre de la prise.
- Veillez à ce que tous les câbles d'entrée et de sortie soient dotés d'une décharge de traction appropriée (non fournie).
- Couvrir toutes les ouvertures donnant accès aux bornes de câblage de de le l'onduleur par mesure de sécurité afin d'éviter les blessures corporelles ou les dégâts matériels.
- Prévoir un espace suffisant autour de l'onduleur et du secteur hydro-électrique pour assurer une bonne ventilation.
- Installer un disjoncteur de protection facilement accessible en amont pour déconnecter le système de la source d'alimentation en courant alternatif.
- Connecter l'onduleur à une source d'alimentation secteur protégée contre les surintensités, les courts-circuits et les défauts de mise à la terre.
- Relier le conducteur d'entrée de l'onduleur à la terre au niveau de l'équipement de service ou du transformateur d'alimentation s'il est alimenté par un système dérivé séparé. Relier correctement le conducteur de terre de l'entrée de l'onduleur à la terre de protection au niveau du panneau de service.
- Cet onduleur est alimenté par plus d'une source - la déconnexion de la source de courant alternatif et de la source de courant continu est nécessaire pour mettre l'appareil hors tension avant de procéder à l'entretien.
- Pour les ÉQUIPEMENTS ENFICHABLES, la prise de courant doit être installée à proximité de l'équipement et doit être facilement accessible.
- Installer l'onduleur à proximité de l'équipement connecté pour en faciliter l'accès, en évitant les zones très fréquentées où l'on risque de le heurter accidentellement.
- Veillez à ce que les câbles d'alimentation et de sortie de l'onduleur soient placés de manière à éviter tout risque de trébuchement ou d'enjambement. Éviter que les cordons d'alimentation n'entrent en contact avec des surfaces chaudes.
- Utilisez uniquement des câbles d'alimentation marqués UL, TUV ou ETL pour connecter l'équipement à l'onduleur ou comme câble d'alimentation pour connecter l'onduleur à une prise de courant alternatif.
- Ne branchez jamais l'onduleur sur lui-même pour éviter de l'endommager, et assurez-vous toujours que la fiche est complètement insérée.
- Si l'entrée d'alimentation est câblée, établissez une connexion de mise à la terre avant de la raccorder à la borne de câblage du bâtiment.

- **ATTENTION : Risque d'électrocution.** Lorsque vous déplacez l'onduleur d'un environnement froid à un environnement chaud, assurez-vous qu'il est complètement sec avant de l'installer et prévoyez un temps d'acclimatation d'au moins deux heures.
- **ATTENTION : Risque d'incendie.** Utilisez un cordon d'alimentation de taille appropriée (10AWG pour le fil de sortie 3KVA et 12AWG pour le fil de sortie 2kVA), un fil de cuivre à 75°C et appliquez un couple de 0,5Nm (4,4lb-in) lors de la connexion au bloc de jonction.
- **ATTENTION : Risque d'électrocution ou d'incendie.** Ne raccordez l'onduleur qu'à un circuit pourvu d'une protection maximale recommandée contre les surintensités de circuit de branchement avec une intensité nominale conforme au National Electrical Code® (NEC®), à l'ANSI/NFPA 70, au Code canadien de l'électricité, Partie 1, C22.1, ou à votre code national et local de l'électricité :

Capacité de l'onduleur	Disjoncteur de Branchement	Spécifications des Disjoncteurs	Câblage AWG	Câblage mm2
1000VA	10A	125V, 16A, 2-pôle	12AWG	3.33
2000VA	20A	125V, 30A, 2-pôle	10AWG	5.26
3000VA	30A	125V, 40A, 2-pôle	8AWG	8.37

- **ATTENTION : Risque d'électrocution.** Ne branchez pas d'équipement à la borne de sortie 2kVA / 3kVA lorsque l'onduleur est sous tension ou fonctionne sur batterie. Mettez toujours l'appareil hors tension, débranchez-le de la source d'alimentation et assurez-vous qu'aucune tension n'est présente avant de procéder au câblage de l'onduleur ou de tout autre équipement.
- **ATTENTION : Risque d'électrocution.** Vérifier que tous les circuits de branchement (secteur) et de basse tension (contrôle) sont hors tension et verrouillés avant d'installer des câbles ou d'effectuer des connexions, que ce soit dans la boîte de jonction ou sur l'onduleur.
- **AVERTISSEMENT : Maintenez le produit sur des surfaces planes.** Le produit peut devenir instable et basculer s'il est stocké ou transporté sur une surface irrégulière, ce qui peut entraîner des blessures corporelles, la mort ou des dégâts matériels.
- **AVERTISSEMENT : Ne pas utiliser l'onduleur dans le cadre d'activités à haut risque telles que le nucléaire, la médecine, les équipements de maintien en vie ou les aquariums, ni à proximité de l'eau ou dans un environnement humide.** N'utilisez jamais cet onduleur avec un équipement de maintien en vie ou tout autre équipement dont la défaillance peut raisonnablement entraîner la défaillance de l'équipement de maintien en vie ou affecter de manière significative sa sécurité ou son efficacité. N'utilisez jamais cet onduleur en présence d'un mélange anesthésique inflammable avec de l'air, de l'oxygène ou de l'oxyde nitreux.

2.2. UTILISATION

- Ne jamais déconnecter le câble de mise à la terre de de l'onduleur ou des bornes de câblage du bâtiment, car cette action annulerait la mise à la terre de l'ensemble du système de l'onduleur et de tous les équipements connectés.
- Cet onduleur est équipé de batteries internes et peut rester sous tension même lorsqu'il est déconnecté du circuit de branchement (alimentation).
- Pour des raisons de sécurité, évitez de déconnecter le câble d'alimentation ou la prise de câblage du bâtiment (prise antichoc mise à la terre) pendant le fonctionnement, car cela couperait la mise à la terre de l'onduleur et de toutes les charges connectées.
- Veillez à ce que l'onduleur reste à l'abri des liquides ou des objets étrangers, et évitez de l'installer à proximité de sources d'eau, y compris des aquariums, ou de vous livrer à d'autres activités à haut risque.
- **ATTENTION : Risque d'électrocution ou d'incendie.** Évitez d'utiliser des rallonges ou des parasurtenseurs avec l'onduleur, et ne branchez jamais l'entrée de l'onduleur sur lui-même. Ces actions peuvent endommager l'onduleur, présenter un risque d'incendie, provoquer des surcharges ou endommager l'équipement connecté.
- **ATTENTION : Risque de suffocation, d'étouffement, de blessure corporelle ou d'électrocution.** Empêchez les personnes dont les capacités sensorielles, physiques ou mentales sont réduites, les enfants ou les animaux domestiques de jouer ou d'être laissés sans surveillance avec les matériaux d'emballage, les sacs en plastique, les batteries, l'onduleur ou d'autres petites pièces.

2.3. MAINTENANCE

- Ne remplacez le fusible que par un fusible de même type et de même ampérage afin d'éviter tout risque d'incendie.
- Avant d'effectuer toute opération d'entretien et/ou de maintenance, assurez-vous que les batteries sont déconnectées. Vérifiez l'absence de courant et de tension dangereuse dans le condensateur ou les bornes du condensateur BUS.
- **ATTENTION : Risque d'électrocution.** L'onduleur fonctionne avec des tensions dangereuses. La maintenance, la réparation ou le remplacement de la batterie ne doivent être effectués que par du personnel qualifié.
- **ATTENTION : Risque d'électrocution.** Même après avoir déconnecté l'onduleur de l'alimentation secteur (borne de câblage du bâtiment), les composants à l'intérieur de l'onduleur restent connectés à l'alimentation potentiellement dangereuse de la batterie.
- **ATTENTION : Risque d'électrocution.** Le circuit de la batterie n'est pas isolé de la tension d'entrée et une tension dangereuse peut être présente entre les bornes de la batterie et la terre. Vérifiez l'absence de tension avant toute intervention.
- **AVERTISSEMENT : Risque d'énergie électrique.** N'essayez pas de modifier le câblage ou les connecteurs de la batterie, car de telles tentatives peuvent entraîner des blessures graves.

2.4. SÉCURITÉ DES BATTERIES

- Seul un personnel qualifié, familiarisé avec les procédures et les mesures de sécurité nécessaires, est habilité à entretenir ou à remplacer les batteries.
- Lors du remplacement des batteries, utilisez le même type et le même nombre de batteries ou d'ensembles de batteries, et assurez-vous qu'elles sont neuves.
- Vérifiez que les batteries ne sont pas mises à la terre par inadvertance et, le cas échéant, retirez la source de la terre. Tout contact avec une partie quelconque d'une batterie mise à la terre peut entraîner une électrocution, et il est possible de réduire ces risques en supprimant la mise à la terre lors de l'installation et de la maintenance (applicable aux équipements et aux alimentations par batterie à distance ne disposant pas d'un circuit d'alimentation mis à la terre).
- Une mauvaise utilisation des batteries, telle que la surcharge ou la surchauffe, peut entraîner la décharge de l'électrolyte de la batterie, qui est nocif pour la peau et les yeux et peut être toxique.
- Si l'onduleur est défectueux, déconnectez la batterie interne avant de le stocker, de le mettre au rebut ou de le transporter.
- Il est essentiel de se débarrasser correctement des batteries. Contactez votre centre local de recyclage des batteries ou reportez-vous aux réglementations locales pour connaître les exigences en matière dans ce domaine.
- **AVERTISSEMENT : Ne jetez jamais les batteries au feu.** Elles peuvent exploser si elles sont exposées à une chaleur élevée ou à une flamme.
- **AVERTISSEMENT : N'ouvrez pas et ne mutilez pas les batteries.** L'électrolyte libéré est nocif pour la peau et les yeux et peut être toxique. En cas de contact d'un acide avec la peau ou les yeux, rincer à l'eau douce et consulter immédiatement un médecin.
- **ATTENTION : Risque d'électrocution.** Les batteries peuvent présenter un risque d'électrocution et de courant de court-circuit élevé. Les précautions suivantes doivent toujours être observées lors des interventions sur les batteries :
    - Retirer les montres, bagues ou autres objets métalliques.
    - Utiliser des outils avec des poignées isolées.
    - Porter des gants et des bottes en caoutchouc ainsi qu'une protection oculaire.
    - Ne pas poser d'outils ou de pièces métalliques sur l'onduleur ou les bornes de la batterie.
    - Déconnecter la source de charge avant de connecter ou de déconnecter les bornes de la batterie.

2.5. PRÉCAUTIONS SUPPLÉMENTAIRES

- Toute altération ou modification de cet appareil non explicitement approuvée par Maruson peut entraîner l'annulation de la garantie.
- L'onduleur ne contient aucune pièce réparable par l'utilisateur. Ne pas effectuer de réparations ou

de maintenance à moins qu'elles ne soient effectuées par un professionnel du service après-vente agréé.

- La garantie ne couvre pas les cas d'utilisation incorrecte, de fonctionnement, de manipulation, d'altération, de mauvais usage, d'abus, de manque d'entretien ou d'utilisation de l'onduleur ou de l'équipement connecté d'une manière non spécifiée dans le manuel d’utilisation.

3. PRODUCT INTRODUCTION

The Maruson Tacoma TW is a robust online double-conversion UPS, characterized by high performance capabilities aimed at safeguarding critical equipment from prevalent power disturbances. When operating in Normal Mode, it ensures an uninterrupted power supply with a seamless transition to battery backup power, delivering a pure sine wave output. This UPS effectively shields connected devices from transient utility interruptions such as blackouts, brownouts, sags, surges, and line noise, as well as mitigates other minor power fluctuations. Its integrated intelligent battery management system diligently monitors internal batteries, enhancing their service life by optimizing charging based on capacity conditions. Additionally, the system will proactively issues warnings in advance of the battery's end-of-life, facilitating timely replacement.

For this series, there are three version of each capacity level with reference to them throughout the manual as follows: Basic (‘B’ models), Standard, and Extended Runtime (‘L’ models).

3.1. OPERATION FLOW

1) The UPS is powered by the mains power supply (AC), passing through a surge suppressor and EMI/RFI filter.
2) From there, the power takes one of two paths: it either proceeds to the rectifier for the conversion of AC (mains power supply) to DC (battery power), or it bypasses the rectifier and directly supplies power to connected equipment through the static bypass switch. **Note:** When the UPS is in Bypass Mode, the power path does not safeguard connected equipment from power disturbances like power failures, surges, and sags.
3) In the path through the rectifier, power undergoes conversion from AC to DC before reaching the battery charger to charge the batteries. Simultaneously, power is directly supplied from the rectifier to the inverter for the conversion of DC to AC power.
4) The power routed through the inverter or static bypass switch then undergoes filtration by the EMI/RFI filter to reduce electromagnetic interference (EMI) and radio frequency interference (RFI) originating from the mains power, thereby safeguarding connected equipment.
5) If the mains input exhibits abnormalities, the controller discontinues the AC/DC rectifier and switches to DC/DC to provide battery power to the inverter (AC/DC) until the AC power returns to normal.

Note: Within the UPS, the input Neutral is not bonded with PE, and the grounding is contingent upon the input power distribution system. The product is compatible with TN, IT, TT power distribution systems, featuring Line, Neutral, and PE, or L1, L2, PE, with a nominal voltage of 100/110/120/125V at 50/60Hz.

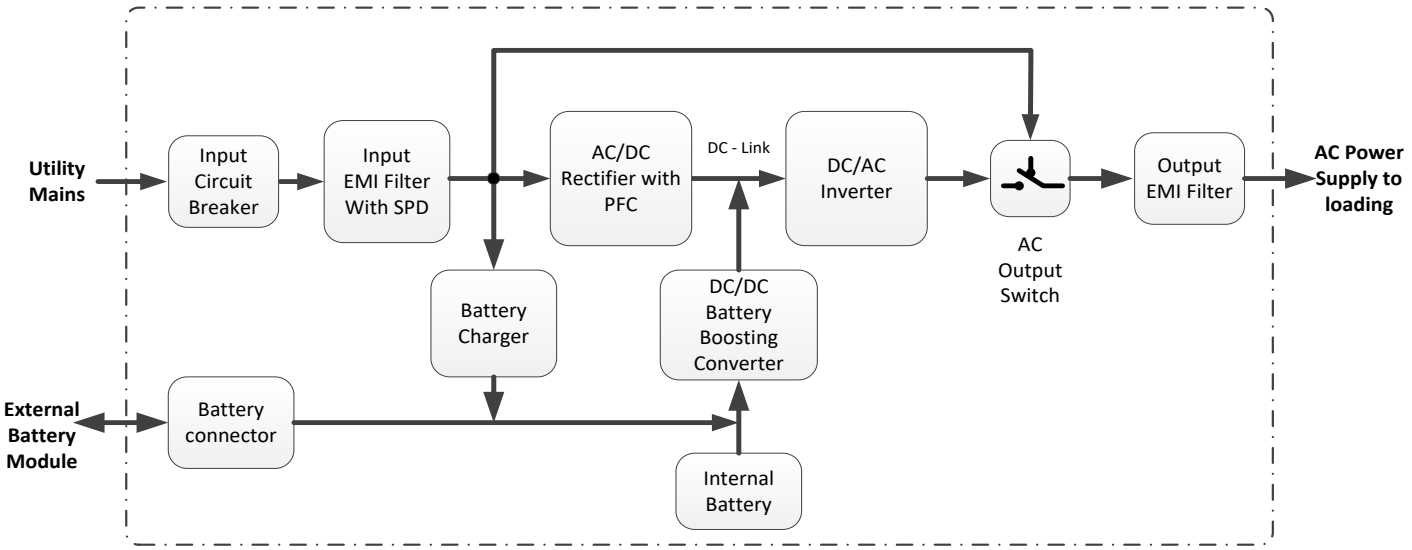


Figure 1 - Operation Diagram

4. INSTALLATION

4.1. UNPACKING AND INSPECTION

4.1.1. Unpacking

This package contains: (1) Tacoma TW UPS, (1) EPO Tab, and (1) User Manual. Standard and extended runtime models will also include (1) USB Cable.

Note: Software for power management can be downloaded online from the product page for your model.

4.1.2. Handling Safety

CAUTION: Neglecting proper lifting techniques may lead to physical injury and equipment damage. Refer to the product weights provided in this manual before attempting to lift or maneuver the UPS. Do not engage in lifting, moving, or any activity that may pose a risk to physical well-being or equipment unless you and anyone assisting you are physically fit and mentally clear. Prior to installation, thoroughly inspect the UPS for potential damage during transportation. If any damage is detected, refrain from powering on the UPS and promptly inform your dealer. Retain all packaging materials for potential future use.

Note: Avoid installing the UPS or EBB with its front or rear panel facing downward at any angle, as such positioning severely impedes internal cooling and may result in unit damage. Please note that this type of damage is not covered under warranty.

4.1.3. UPS Installation

1) Ensure that the wire, circuit breaker, and sockets meet the necessary capacities corresponding to the current rating of the UPS to prevent the risk of electric shock and fire hazards.

Note: Equipment with motors should consider in-rush current as part of the overall UPS capacity.
WARNING: It is advisable to use a 10AWG for the 3kVA model if it is a hardwired input version.

2) Place the UPS in a location with a minimum of 7.8 in (20 cm) of free space behind it, allowing for proper airflow around the sides. Do not obstruct the UPS fans.
3) Prior to any hardwiring (if applicable for your UPS mains input), ensure that the mains switch in the building is turned off, and the UPS is powered off.
4) Before connecting the load to the UPS, turn off all load switches.
5) Connect your equipment to the UPS through the designated outlet sockets.
6) To optimize battery runtime during initial startup, allow the UPS to charge for at least 10 hours before putting it into use.

Note: The batteries will charge anytime it is plugged into an AC power source regardless of UPS on/off status. The battery load meter indicating it is always charging is normal for this UPS.

4.1.4. External Battery Bank (EBB) Installation

Connect EBBs to your UPS to increase battery runtime during extended power outages.
Note: EBB option is only available for the Standard and Extended Runtime (‘L’) versions.

1) Ensure the UPS is powered off and disconnected from the AC power source before proceeding with the EBB connection. Utilize the EBB model specifically designed for your UPS model and refrain from any modifications to the EBB battery connectors.
2) Remove the two screws securing the Battery Connector Plate. Save the Plate for potential future use if EBB connection is no longer required.
3) Connect the EBB Battery Connector to the UPS Battery Connector, ensuring correct alignment of colors on both connectors.
4) Secure the connection in place using the two screws from the UPS Battery Connector Plate.
5) Connect your equipment to the UPS outlet sockets.
6) Connect the UPS input power cord to the mains and power on the UPS. No additional setting changes are necessary as the UPS will automatically detect the EBB.

- **WARNING:** Before replacing any batteries, verify the battery voltage rating marked on the rear panel to avoid permanent UPS damage. Pay careful attention to the polarity markings on the external

battery terminal block to ensure correct battery polarity connection.

- **WARNING:** Use only the supplied external battery cable to connect the EBB and UPS. Third-party or incompatible EBBs will void all warranties.
- **WARNING:** If no specified external battery cable is provided, prepare a cable capable of carrying a current of >42A for the 3kVA model, and >28A for the 1kVA & 2kVA models. The cross-section area should be greater than 10 mm² for 3kVA, and greater than 4 mm² for 1kVA & 2kVA models. The battery wire color is recommended as following:

+	**GND**	−
Red wire	Yellow/Green wire	Black wire

7) Connect the GND pole of the external battery cable to the battery pack's earth point. Connect the Positive (+) pole to the Positive polarity and the Negative (-) pole to the Negative polarity of the battery pack. Always connect the ground wire first for safety.
8) Connect the external battery cable plug to the external battery terminal block on the UPS's rear panel.
9) Verify the wiring and voltage of the battery pack to ensure correct polarity and voltage, with securely fastened wires.

- **Note:** Exceeding the maximum number of EBBs listed in the user manual may cause underperformance or potential damage to the UPS or EBB.
- **Note:** Never connect or disconnect EBBs when the UPS is running on battery power. Doing so may damage the EBB and/or UPS.

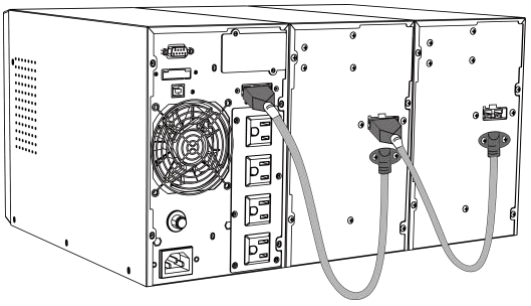


Figure 2 - UPS and EBB Connection

4.1.5. Power Management Software

The provided power management software is compatible with specific server and computer operating systems, allowing you to monitor and control your UPS system. You can download the software for your UPS model from our website's product page. To utilize the software:

1) Connect the USB cable provided with the UPS to both the UPS and your computer. If using an RS232 cable, securely fasten the screw on both the UPS and PC after establishing the connection.
2) Download and install the software from our website under your product model number. When prompted, use serial number: **511C1-01220-0100-478DF2A**.
3) Follow the on-screen instructions to complete setup. In some cases, restarting your operating system may be required after installation to use.

5. DISPLAY INTERFACE

5.1. CONTROL PANEL

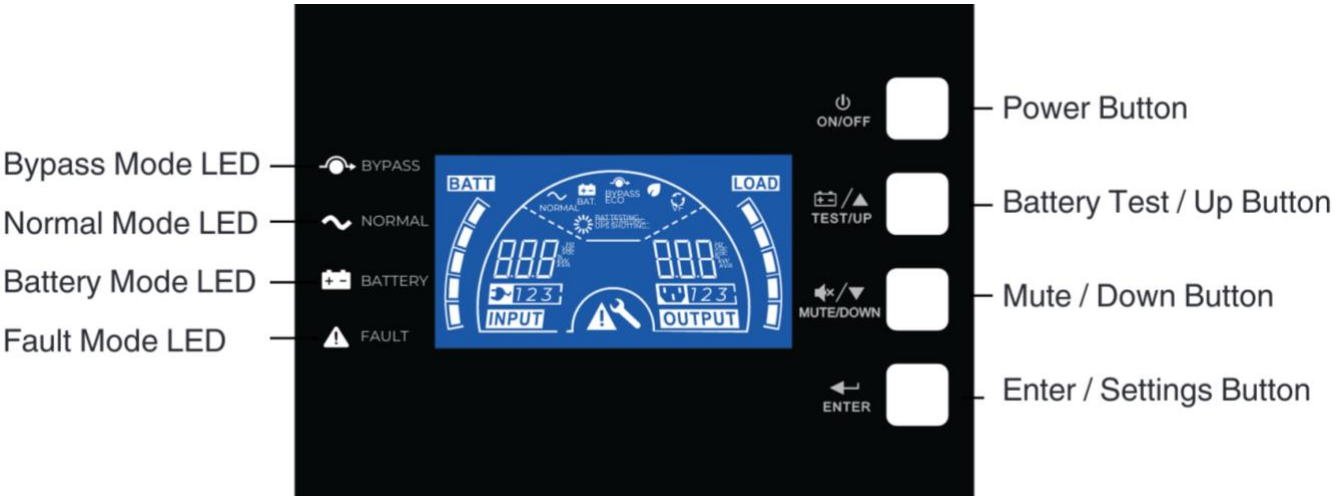


Figure 3 - Control Panel

5.1.1. LED Status

UPS Mode	Status Indicator
Bypass	An abnormal condition was detected and the UPS converter cannot function properly. In Bypass Mode, the UPS continues to deliver power from the mains; however, instead of the usual path providing power protection, the mains power is directed to connected loads via the bypass circuit. While in Bypass Mode, the UPS is unable to offer battery backup functionality, as the load is directly supplied by utility power.
Normal	In this mode, the mains power supply is normal and UPS mains power passes from the mains power source to the inverter, batteries, and rectifier connected equipment protected from common power disturbances – otherwise known as double-conversion. If the connected load is above the rated capacity, the UPS alarm beep until you remove connected devices to stay under the rated capacity threshold. In the event of the battery indicator is cyclically blinking, it indicates either a disconnection from the battery or an abnormal battery condition. To prevent unexpected interruptions in UPS output during power losses from the mains supply, thoroughly examine the battery connection and condition.
Battery	The UPS identified an irregularity in the mains power (such as a blackout, voltage fluctuation, frequency fluctuation, etc.) or a Battery Test is in progress. In this operational state, the connected loads receive power from the UPS batteries to remain operational. In Battery Mode, the UPS emits a beep every 4 seconds until mains power is restored. The alarm can be temporarily silenced by pressing the Mute/Down button. In the event of dwindling battery capacity, the UPS issues a beep every second, serving as an alert that both the UPS and connected loads will shut down soon.
Fault	In Fault Mode, there is an abnormality detected. Fault Mode is typically combined with an error code. Refer to the Troubleshooting section of this manual for next steps.

5.1.2. Control Buttons

Button	Function
Power	**Turn UPS system ON or OFF:** Press the Power button for 3 seconds before releasing. You will hear a beep and the UPS will cycle through a 15-second startup test before supplying power to the sockets when turning On. When powering Off, the UPS will go

	to Standby Mode unless you unplug from the mains power source to completely turn off. **Cold start:** To start the UPS in Battery Mode during a power failure, press and hold the ON button for 3 seconds before releasing. The UPS will cycle through a brief startup test before supplying power to the sockets.
Test / Up	**Conduct battery test:** While the UPS is in Line Mode or ECO Mode, press the ON button for 2 seconds to run a battery test. This only available while in either of these two modes. **Scroll up:** Press the button once to go up one page.
Mute / Down	**Mute audible alarm:** While in Battery Mode, press the ON button for 1 second to temporarily disable audible alerts. Once mains power is restored, audible alerts will be reset to enabled. **Scroll down:** Press the button once to go down to the next page.
Enter	**Save selected option:** If the UPS system is Standby / No Output or Bypass Mode, confirm settings selection by pressing Enter button.

5.2. LCD SCREEN

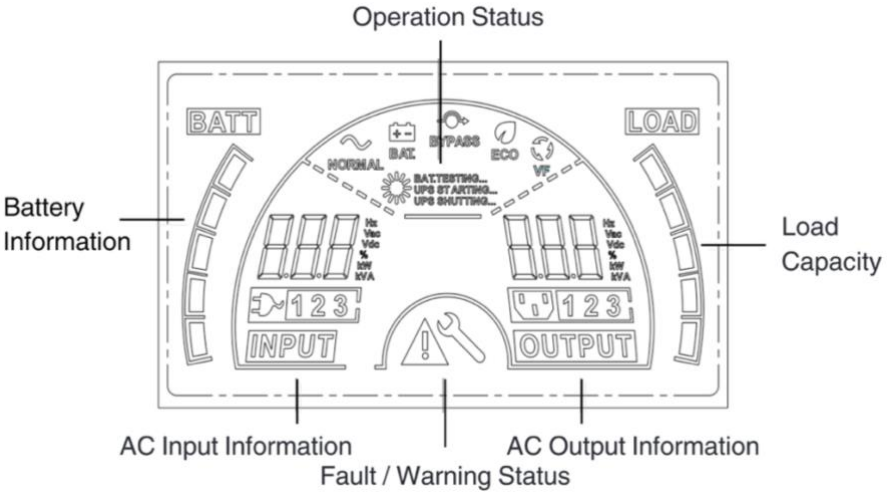
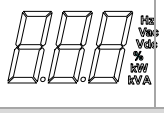
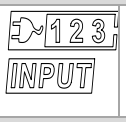
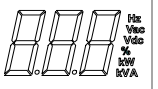
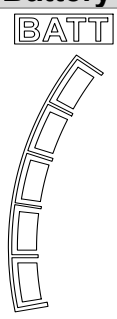
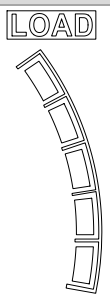


Figure 4 – LCD Screen

5.2.1. LCD Module

Icon	Function	Icon	Function
Input Information			
	**Input Measurements:** Indicates input voltage/frequency values, which are displayed alternately.		**Mains Power:** Indicates input power is supplied by the mains power.
Output Information			
	**Output Measurements:** Indicates output voltage/frequency values, which are displayed alternately.		**Output Power:** Indicates sockets are receiving AC power.
Battery Information		**Load Information**	
	**Battery Capacity:** Every grid represents a capacity of 20%. The UPS is always charging the battery and using battery power while plugged into a mains power source when conditions are normal. It is normal to see the battery grid indicating it is charging in normal conditions.		**UPS Load Capacity:** Every grid represents a capacity level of 20%.
Operation Mode			

NORMAL	**Normal:** UPS is operating normally in double-conversion mod and supplying power to connected equipment.	BAT.	**Battery Mode:** Utility power failure has occurred and connected equipment is now powered by battery power. Audible alert will beep every 4 seconds in this mode.
BYPASS	**Bypass Mode:** An overload or fault has been detected, or command was received, and UPS has transferred the load to utility power, bypassing the normal route. Connected equipment is powered but is not protected by the UPS. Audible alert will beep every 2 minutes in this mode.	ECO	**ECO Mode:** UPS is operating on economy mode. Connected equipment is powered by utility power but will not be protected by the UPS.
		VF	**CVCF (Constant Voltage, Constant Frequency) Mode:** The UPS adjusts the output voltage and frequency to the saved measurement.
System Status			
BAT.TESTING...		**Battery Test Mode:** UPS is testing battery conditions.	
UPS STARTING...		**UPS is turning ON:** Press the Power button for 3 seconds to turn your unit ON.	
UPS SHUTTING...		**UPS is turning OFF:** Press the Power button for 3 seconds to turn your unit OFF.	
Miscellaneous			
OVER LOAD	**Overload Warning:** Remove some equipment until the total capacity is within range.		**Fault Mode:** Solid Fault symbol indicates UPS is in Fault Mode. **Fault Warning:** Flashing Fault symbol and error code indicates error detected. **Settings:** Indicates the UPS is in Setting Mode.

5.2.2. Audible Alert Indicators

Description	Audible Alert
Battery Mode	Beeps every 4 seconds
Low Battery Warning	Beeps every second
Overload	Beeps every second
Fault	Continuously beeps
Bypass Mode	Beeps every 2 minutes

5.3. REAR PANEL RENDERING

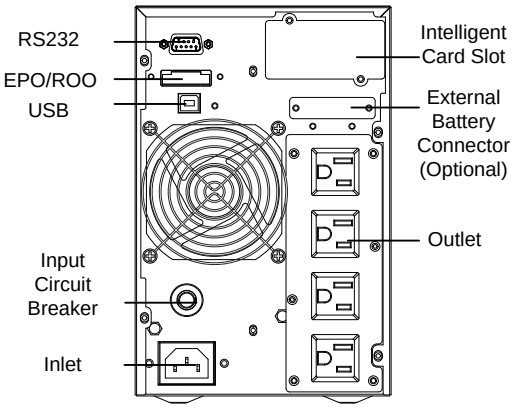


Figure 5 – 1000VA Model

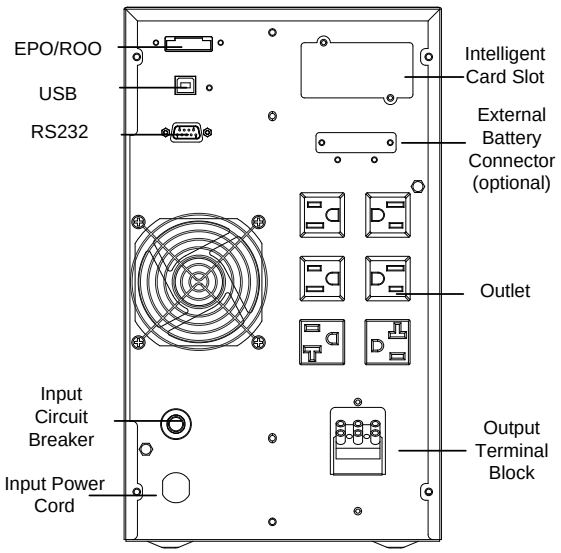


Figure 6 - 2000VA Model

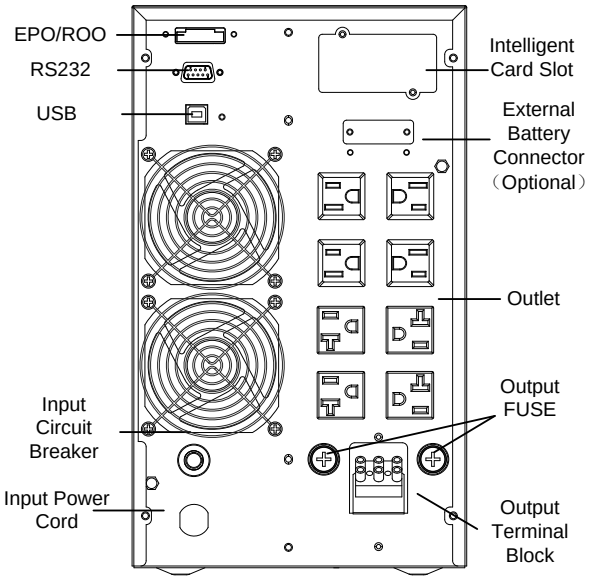


Figure 7 - 3000VA Model

Note: Basic models do not have EBB Connectors. EBB option is available for Standard and Extended Runtime versions only.

Features	Function
EPO / ROO Connection	The EPO (Emergency Power Off) Tab is a safety feature designed to immediately disconnect power from the UPS inverter, preventing the transfer to internal bypass. The ROO (Remote On/Off) feature facilitates remote control of the power button to initiate the shutdown of the UPS.
USB Port	Connect to a compatible server or computer for communication, monitoring, and control of the UPS.
RS232 Port	Connect to a compatible server or computer for communication, monitoring, and control of the UPS.
Cooling Fan	Runs at different speeds to keep internal components cool.
Input Line	Input power cord or terminal input for connection from input circuit branch (mains).

Breaker	Protects UPS from output overload. If this trips, remove some equipment load from the UPS and allow the UPS to cool. Reset the breaker and turn on the UPS and connected equipment.
Intelligent Slot	Add an optional network card to remotely monitor, control, and communicate with the UPS.
Battery Connector	Add an optional external battery bank (EBB) for additional battery runtime during power outages. Connect up to 3 EBBs for Standard models with 1A or 6 EBBs for Extended Runtime models with 4A charge. **Note:** This option is not available for basic models ('B' models). Extended runtime models ('L' models) require an EBB for battery backup function.
Fuse	3kVA model only. Protects the connected equipment from electrical surge. Replace with the same type fuse if blown or your connected equipment will not be protected.
Output Socket	These sockets provide pure sine wave AC power output when running on battery power. In a power outage or severe brownout, these outlets will be powered by battery.
Terminal Output	Connect equipment to UPS by hardwire connection.

5.4. OUTPUT HARDWIRE (2KVA / 3KVA MODELS)

1) Power down the UPS and disconnect it from the AC power source.
2) Unscrew and set aside the screws holding the terminal outlet cover in place.
3) Before connecting the remaining terminals, attach the ground wire to the appropriate ground terminal.
   CAUTION: Risk of electric shock. Hardwiring should only be performed by a qualified electrician.
   CAUTION: Risk of electric shock. Always connect the ground terminal before any other terminal cables.
4) Ensure all connections are securely fastened before reattaching the terminal cover plate and screws.
   CAUTION: Risk of electric shock. Replace the terminal cover plate after hardwire assembly. Failure to do so may result in personal injury or equipment damage.
5) Connect the UPS to its AC mains power source and activate the UPS.

5.5. OUTPUT FUSE

The 3kVA model is equipped with two output fuses to protect connected equipment from an overload instead of a resettable circuit breaker. If either of these fuse's blow, replace it with a 20A fuse certified to UL289-14 standards.

To replace the fuse:

1) Turn off the UPS and disconnect it from the mains power supply.
2) Use a Philips screwdriver to remove the fuse cover.
3) Replace the output fuse.
4) Reverse the order to turn the UPS back on.

5.6. COMMUNICATION PORTS

The Communication Ports enable UPS monitoring via a computer using the provided power management software through either an RS232 or USB connection.
Note: Only one option (RS232 or USB) can be utilized at a time.

The Intelligent Slot provides a convenient option for remote UPS monitoring by incorporating an add-on network card and connecting through an Ethernet cable.

5.7. USB

Plug one end to the computer and other end to the UPS. The USB port complies with USB 1.1 protocol and has PnP (plug-and-play) function.

5.8. RS232

Plug one end to the computer and other end to the UPS. Pin assignment and description of DB-9 connector:

Pin #	Definition
2	TXD (output). Transmits data.
3	RXD (input). Receives data.
5	GND. Ground.

5.9. EPO/ROO

The EPO/ROO port is a dry contact input port designed to work in conjunction with external switches, facilitating the implementation of Emergency Power Off (EPO) and Remote On/Off (ROO) functions. Below is the wiring diagram for EPO & ROO switches, with 4 poles arranged from left to right.

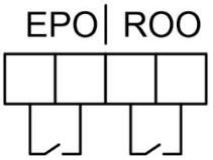


Figure 8 - EPO/ROO Switches

5.10. REMOTE NETWORK CARDS

Remote network cards facilitate the remote monitoring of the UPS through an Ethernet cable and web browser. To install a network card:

1) Remove the two screws securing the Intelligent Slot plate and insert an AS400 or NMC card.
2) Reinsert the screws to securely affix the card in place.
3) Install the software that accompanies your card and follow the on-screen instructions to complete the setup.

Note: It is not necessary to shut down the UPS during the card installation process.

5.10.1. NMC Card

Utilizes SNMP and HTTP capabilities to monitor and control the UPS through a web browser interface, and it can also send email alerts. The card necessitates an Ethernet connection at the location where the UPS is installed for proper functionality.

5.10.2. AS400 Card

Dry-contact management card for remote UPS status and monitoring for AS400 servers.

6. OPERATION MODES

The LCD module and LEDs will indicate the statuses and conditions identified by the UPS. At any given time, only one normal operating code or fault code will be visible. However, it's important to note that warnings may be displayed with multiple alerts on-screen even during normal operating modes.

6.1. NORMAL MODE

Normal Mode is standard operational setting for your UPS, providing the highest level of protection. Within Normal Mode, the mains input undergoes rectification/conversion through the AC/DC section and is subsequently inverted to a stable output by the DC/AC section, otherwise known as double-conversion. Should a power disturbance occur beyond the operational range, the UPS seamlessly transitions to Battery Mode, ensuring uninterrupted sine wave output.

This mode is highly recommended for optimal UPS operation and protection of connected equipment.

6.2. BYPASS MODE

In Bypass Mode, power is directly routed from the mains power to connected equipment, bypassing internal converters and without regulation. If the controller detects the mains is abnormal, it will shut off the output to protect the load.

The Bypass status icon will display on screen, Bypass Mode LED will be on, and UPS will beep once every 2 minutes indicating the UPS is working in Bypass Mode. Information about the utility power, the battery level, the UPS output and the load level will be displayed.

Note: If mains power fails while in Bypass Mode, the UPS will not provide battery backup power or be protected from power surge and sags.

6.3. BATTERY MODE

During Battery Mode, connected equipment receives power from the UPS's battery source, which is then converted to AC power by the inverter (DC/AC) in the event of a mains power failure. Upon recovery of the mains input, the UPS seamlessly transitions back to Line Mode.

When the UPS is in Battery Mode, the on-screen Battery icon is visible, the LED indicator is illuminated, and an alarm beeps every 4 seconds, indicating the operational state. Pressing the Mute/Down button on the front panel for more than 1 second in this mode temporarily silences the alarm. Battery Mode provides real-time information on battery level, UPS output, and load level.

Note: It is recommended to use AC mains power whenever available to maximize battery lifespan.

6.4. BATTERY TEST MODE

Battery Test Mode operates by temporarily halting the AC/DC section and initiating a brief battery discharge while the mains input remains stable. Should the UPS identify any battery errors during this process, it will promptly revert to Line Mode, accompanied by a warning prompting further assessment of the batteries for potential replacement.

Activate Battery Test Mode while in Line Mode or ECO Mode by pressing the Test/Up button for 4 seconds or using the power management software. The LCD will prominently indicate "Battery Test," signifying that the UPS is actively engaged in the battery testing process.

Note: It is recommended to limit the frequency of battery testing to extend battery lifespan.

6.5. ECO (ECONOMY) MODE

ECO (Economy) Mode, alternatively recognized as high efficiency mode or active standby mode, is the most energy-efficient operating state. However, it entails the inverter being in standby rather than actively online, ready to swiftly transition to battery power in the event of a power disruption. In ECO Mode, mains power bypasses the double-conversion (AC/DC and DC/AC) function, resulting in a transfer time of less than 10ms. Additionally, power conditioning is deactivated when ECO Mode is selected. It is advisable to avoid using this mode for loads that necessitate a zero-transfer time function.

In ECO Mode, the ECO icon will appear on-screen.

6.6. EPO MODE

EPO (Emergency Power Off) Mode serves as a safety feature designed for the remote shutdown of the UPS during emergency situations, such as fires or other scenarios necessitating swift building evacuation. Activating the EPO switch triggers an immediate stop of power to connected equipment, shutting down both the rectifier and inverter. Simultaneously, the battery charger discontinues the charging process. The UPS control circuit will persist if a mains power source is still supplied to the input power, indicated by the appearance of an EPO status code on the LCD during this mode.

You will not be able to operate the UPS normally or completely shut off the UPS from the control panel until the EPO status is deactivated.

6.7. FAULT MODE

In the event of an internal failure detection requiring the inverter to cease operation, the UPS will enter Fault Mode. During this state, a warning symbol will flash on-screen, accompanied by an audible alert. In Fault Mode, there is a potential risk of power loss, as the output power is sourced from the bypass.

Refer to the Troubleshooting section for further information.

7. OPERATION

7.1. TURN ON THE UPS WITH MAINS (AC SOURCE)

1) Connect the UPS to an AC power source. The LCD will display either Standby Mode or Bypass Mode.
2) Hold down the Power button for 3 seconds to switch to Normal Mode. The UPS will conduct a test for up to 15 seconds before transitioning to Normal Mode and initiating the power supply to connected equipment.

Note: There is no UPS output power or battery power in Standby Mode.

7.2. START THE UPS WITH BATTERY POWER (DC COLD START)

This UPS is equipped with a cold start function, enabling it to provide power from the DC source (battery) even in the absence of an AC source, provided that battery levels and voltage are adequate.

1) Hold down the Power button for 3 seconds. After the completion of a brief startup test, the UPS will activate in Battery Mode, supplying power to the outlets.
2) While the UPS operates in Battery Mode, an audible alert will beep every 4 seconds until the battery capacity is low. It will then beep every second as a warning that the battery is about to run out. Audible alerts can be temporarily silenced by pressing the Mute button once. Once the AC power source is restored, audible alerts will be reactivated for the next instance when the UPS operates in Battery Mode.

7.3. CONNECT EQUIPMENT TO UPS

Activate connected equipment after the UPS has completed its power-on sequence for a soft start.

1) Power on each connected device individually rather than simultaneously. The Load Level indicators will display the load capacity in Normal Mode.
2) When connecting inductive loads like printers to the UPS, consider the startup power for calculating UPS capacity, as these loads draw significant power during startup.
   Note: Consider that all motorized equipment may have an in-rush current that differs from the capacity listed on the equipment's ratings label. Consult the equipment manufacturer to confirm in-rush current capacity before connecting to the UPS to avoid damage to the UPS and your motorized equipment.
3) In the event of an overload, the LCD will display an "Overload" warning, accompanied by a two-per-second audible alert.
4) If an overload occurs, promptly turn off or disconnect some equipment. It is advisable to keep the total load connected to the UPS below 80% of its nominal power capacity to prevent overloading during transient periods, ensuring system safety and optimal performance.
5) If the duration of the overload threshold is reached in Normal Mode, the UPS will switch to bypass. Once the overload subsides, it will return to Normal Mode. In Battery Mode, if the overload threshold duration is reached, the UPS will cut off the output and subsequently shut down based on battery capacity.

7.4. CHARGING THE BATTERIES

1) The UPS will automatically charge the batteries upon connection to a mains power source.
2) Charge the batteries for a duration of 10 hours before the initial use or when replacing batteries to attain their maximum charge capacity. Failure to do so may result in a shorter-than-expected backup time due to charge loss incurred during shipping and storage.
3) If storing the batteries for an extended period, ensure to recharge them every three months to uphold battery lifespan.

7.5. DISCHARGING THE BATTERIES

1) When the UPS operates in Battery Mode, the alarm will emit beeps corresponding to the battery capacity. Should the battery voltage reach a critical level, the buzzer will beep rapidly (once every second), signaling the imminent automatic shutdown of the UPS. To prolong backup time, consider turning off non-critical equipment. In situations where the battery is low and no additional load can be switched off, it is advisable to promptly shut down all equipment to prevent potential data loss or load failure.
2) While the UPS is in Battery Mode, the audible alarm can be temporarily disabled by pressing the Mute/Down button. The alarm will automatically reset to the enabled state the next time the UPS enters Battery Mode.
3) The backup time may vary based on environmental factors, including temperature and altitude, load type, battery age, and the quantity of external battery cabinets, among other variables.

7.6. BATTERY TESTING

1) To assess the battery level or aging status while the UPS is operating in Normal Mode, press the Test/Up button for 4 seconds to initiate the UPS's entry into Battery Test Mode. **Note:** Frequent battery testing can significantly reduce the lifespan of the batteries, so it is advisable to limit such tests whenever possible.
2) Alternatively, the battery test can be executed using the monitoring software if it has been installed and connected through the Communication Port.
3) Following the completion of the test, the UPS will seamlessly revert to the previous mode.

7.7. TURN OFF THE UPS WITH MAINS POWER (AC SOURCE)

1) To switch off the UPS (from inverter to bypass mode), press the OFF button for 2 seconds. The UPS will emit a single beep, and the display LED will indicate either Bypass Mode or Standby Mode.
   Note: If the UPS is configured to Enable Bypass Output, the output socket will maintain voltage from the mains power source even after switching off the UPS (inverter) to Bypass Mode.
   Note: To prevent potential power loss for connected equipment when transitioning to Bypass Mode, ensure that connected equipment is appropriately powered down before turning off the UPS.
2) The UPS will remain in Bypass Mode or Standby Mode until it is unplugged from the mains power source, such as disconnecting it from the wall outlet. Following unplugging from the mains power supply, the UPS will shut down completely after a few seconds.
   Note: Prior to shutting down the UPS system, turn off all connected equipment to extend the lifespan of the connected devices.

7.8. TURN OFF THE UPS IN BATTERY MODE (DC SOURCE)

1) Press the OFF button for 2 seconds to power down the UPS in Battery Mode.
2) The UPS will emit a single beep. After a brief interval, the UPS will undergo a complete shutdown, with the LCD dimming.
   Note: Ensure all connected equipment is appropriately powered down before turning off the UPS system.

7.9. MUTE THE ALARM

If the UPS is operating in Battery Mode, press the Mute/Down button for 4 seconds to temporarily silence the audible alerts. The audible alert will automatically resume when the battery is low, serving as a reminder to power down connected equipment for a safe shutdown.

If the UPS is in Bypass Mode, press the Mute/Down button for 4 seconds to temporarily mute the audible alerts. The audible alerts will automatically reactivate when the UPS is in Bypass Mode, indicating a fault has occurred.

Activate audible alerts after temporarily muting by holding down the Mute/Down button for 4 seconds. The UPS will automatically reconfigure to enable audible alerts the next time it transitions into Battery Mode or Bypass Mode.

7.10. OPERATING WITH A WARNING STATUS

1) When the Fault/Warning icon "⚠" is flashing, accompanied by an alarm beeping every second, it signals that the UPS has detected an issue requiring attention. Refer to the Troubleshooting section for a solution.
2) The UPS will continue operating in its original mode, and the operation will not be interrupted. Once the error is corrected, the warning alarm will cease.

7.11. OPERATING IN FAULT MODE

1) The Fault/Warning icon "⚠" will be displayed on-screen, accompanied by a continuous alarm, if the UPS detects a fatal error and is operating abnormally.
2) In the event of a fault, take note of and record the displayed information, as it is crucial for troubleshooting. Refer to the Troubleshooting section to find a solution or additional instructions.
3) After a fault occurs, thoroughly inspect your equipment, wiring, ventilation, mains, battery, and other relevant aspects. Do not attempt to restart the UPS until the cause of the issue is identified. If troubleshooting proves unsuccessful, please contact the distributor or service personnel.
4) In case of an emergency, activate the EPO/ROO connection to immediately disconnect the mains/external battery/output, preventing additional risks or hazards. **Note:** EPO/ROO function cannot be disabled for this feature to work. See the Settings section for additional information.

7.12. CHANGE SETTINGS BY LCD CONTROL PANEL

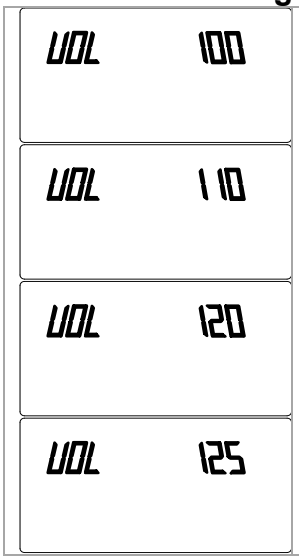
The UPS must be in Standby Mode or Bypass Mode to make any setting changes.

While in Standby Mode or Bypass Mode, press the Settings button for 5 seconds to enter Settings. Press the Up or Down buttons to scroll through the different parameter names options on screen. When the setting you want to change appears, press the Enter button to configure the settings and exit the Settings page. The UPS will exit Settings after 30 seconds of inactivity. Remember to press the Power button for 3 seconds after exiting Settings to active the UPS outlets and supply power to connected equipment.

The Settings options will appear in this order: VOL > FRE > SON > EPO > ROO > BYP > ECO

Setting Name	Setting		Setting Name	Setting
VOL	Output Voltage		ROO	ROO
FRE	Output Frequency		BYP	Bypass
SON	Powering Function		ECO	ECO Mode
EPO	EPO			

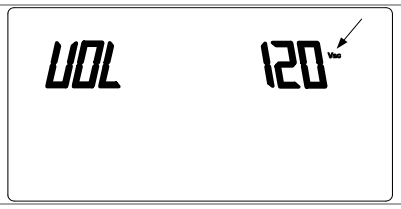
7.12.1. VOL: Change Output Voltage



Select VOL settings to change the output voltage. Select either 100Vac, 110Vac, 120Vac, or 125Vac output voltage.

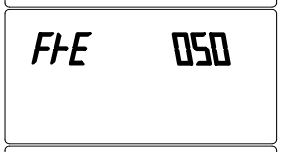
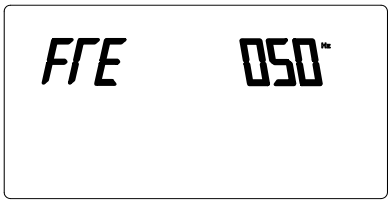
Output voltage options:
100: Sets output voltage to 100Vac
110: Sets output voltage to 110Vac
120: Sets output voltage to 120Vac (default)
125: Sets output voltage to 125Vac

After pressing Enter, a "Vac" icon will appear on the right indicating it has been saved.

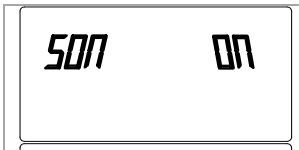
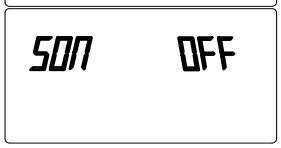
	

7.12.2. FRE: Frequency Converter Mode

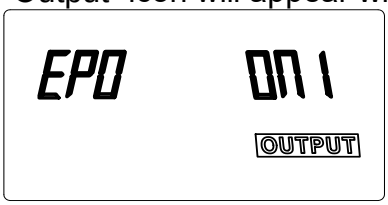
Set Output Frequency, Hertz (Hz) or cycles-per-second, of the UPS output power. Select either synchronized to mains frequency or set to 50Hz or 60Hz.

  	Select FRE to change the output frequency of the UPS. Output frequency options: **000:** Auto-adaptive, the UPS output frequency will be synchronized to mains input (default) **050:** Set output frequency to 50Hz **060:** Set output frequency to 60Hz After pressing Enter, a “Hz” icon will appear on the right indicating it has been saved.  **NOTE:** If the UPS input frequency is 60Hz (refer to the product rating label), changing to 50Hz will also derate the UPS capacity by 60% of the listed capacity. **WARNING:** Using a frequency different from the one your connected equipment is designed for may lead to permanent equipment damage or suboptimal performance.

7.12.3. SON: Auto On Function

 	Select how the UPS reacts when power returns after mains power supply returns. Auto-On options: **ON:** Enables the Auto On function. When the UPS is detects AC mains power supply, it will automatically turn on and operate in Normal Mode without manual intervention. (default) **OFF:** Disables the Auto On function. The UPS will remain in Standby Mode or Bypass Mode until manually turned on. After pressing Enter, a “OUTPUT” icon will appear beneath indicating it has been saved. Example: 

7.12.4. EPO: EPO Switch

EPO 000 EPO 001 EPO 0n1 EPO 0n0	Set how the EPO (emergency power off) switch responds. **001:** Enables EPO **000:** Disables EPO (default) **0n1:** EPO will activate when EPO switch is open **0n0:** EPO will activate when EPO switch is closed if EPO function is enabled (default) “Output” icon will appear when saved. Example:  **Note:** If EPO is set to disabled, setting the EPO switch to activate when open (on1) or closed (0n0) will not render it functionable.

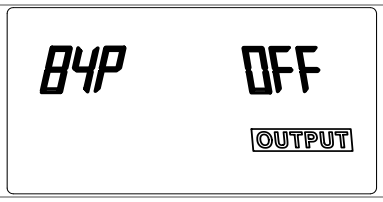
7.12.5. ROO: ROO Switch

r00 000 r00 001 r00 0n1 r00 0n0	Set how the ROO (remote on / off) switch responds. **001:** Enable ROO **000:** Disable ROO (default) **0n1:** ROO activated when switch is open. Will turn on the UPS when ROO switch is open and turn off the UPS when the switch is closed. **0n0:** ROO activated when switch is closed. Will turn on the UPS when ROO switch is closed and turn off the UPS when the switch is open. (default) “Output” icon will appear when saved. Example:  **Note:** If ROO is set to disabled, setting the ROO switch to activate when open (on1) or closed (0n0) will not render it functionable.

7.12.6. BYP: Bypass Mode

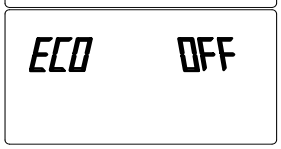
Enabling the Bypass feature facilitates the seamless transfer of the load from the main electrical supply in the event of an internal fault or failure, ensuring uninterrupted power delivery to connected equipment. However, it is crucial to note that if Bypass is enabled during a fault or failure, the UPS will not provide protection to the connected equipment. Disabling the Bypass feature prevents the continued supply of power to connected equipment when the UPS detects a fault or failure.

byP On byP OFF	Select whether to enable or disable Bypass Mode when the UPS detects an internal fault or failure to continue powering the UPS. **ON:** Enable Bypass Mode (default) **OFF:** Disable Bypass Mode “Output” icon will appear when saved. Example:

7.12.7. ECO: ECO Mode

In ECO Mode, the UPS bypasses its internal inverter and operates as a line-interactive UPS instead of double-conversion, which also involves a brief transfer time when switching to Battery Mode when a power disruption occurs.

 	To enable or disable ECO Mode: **ON:** Enable ECO Mode **OFF:** Disable ECO Mode (default) “Output” icon will appear when saved. Example: 

7.12.8. Example of Settings Change

Here is an example how to change the output voltage from 120Vac to 115Vac through the LCD panel.

1) While in Bypass or Standby Mode, press the Enter / Settings button until the tool icon appears.
2) Press the Up or Down buttons until the Parameter Name indicates VOL. Press Enter.
3) When the Output Voltage settings appear on-screen, press the Up or Down buttons until the preferred output voltage appears. Press Enter to save and exit. Press the Power button for 3 seconds to active that outlets.

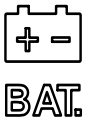
7.13. EVENT LOG AND FAULT LOG

The Event Log and Fault Log can be viewed from a server or computer after installing the included software. This log provides detailed information about the UPS performance and historical data to help identify issues with the system for maintenance or troubleshooting.

8. TROUBLESHOOTING

8.1. LCD WARNINGS AND FAULT CODES

Fault Code	Possible Cause	Action
01	Battery too low	If the UPS batteries are completely drained, charge the batteries for at least 10 hours before use.
	End of battery lifespan	Replace the batteries with the same type and quantity. All batteries should be replaced at the same time.
	Internal failure	Contact your local authorized dealer or Maruson.
02	Internal DC BUS overvoltage protection issue	The UPS has detected an incompatible device connected. Please note that this UPS is not compatible with devices utilizing a half-wave rectifier circuit (e.g., hair dryer, solenoid valve, some lighting equipment, etc.) or those employing energy-regenerative motors (i.e., devices converting and storing energy, equipped with large transformers, or containing capacitors with residual charge).
		Mains voltage too high. Check the input voltage and ensure it is within acceptable range. Turn on the UPS again.
		Internal fault. Contact your local authorized dealer or Maruson.
03	Internal DC BUS undervoltage protection issue	Battery too low or overloaded. Check the battery charge and reduce the load if necessary.
		Internal fault. Contact your local authorized dealer or Maruson.
10	Output short circuit occurred	Turn off the UPS. Check whether the output of UPS or equipment have short circuited. Remove the short-circuited equipment and ensure the UPS has no internal faults before turning on again.
22	UPS overload	Remove non-critical loads until total capacity is within UPS capacity range.
23	Internal temperature too high	Verify that the ambient temperature falls within the operational range of 32°F to 104°F (-20°C to 40°C). Ensure a minimum of 7.8 inches (20 cm) of unobstructed airflow is available at the rear and that the sides allow for adequate airflow. Check the ventilation system, eliminating any heat sources or dust accumulation on the fan. If the UPS is exposed to direct sunlight, relocate it or block the sunlight path. Allow the UPS to cool for at least 15 minutes. If the issue persists, contact your local authorized dealer or Maruson for further assistance.
		Examine the rear fans for accumulated dust, which can impede their ability to cool internal circuits. Carefully use an air compressor to dislodge settled dust. Consider relocating the UPS to a dust-free environment to reduce the likelihood of dust accumulation.
		Internal fault. Contact your local authorized dealer or Maruson.
29	Input rectifier protection issue	Mains voltage too low or overloaded. Check the input voltage and ensure it is within acceptable range. Turn on the UPS again.
		Internal fault. Contact your local authorized dealer or Maruson.
57	Batteries disconnected	Check battery connections are properly connected and any battery cutoff devices such as circuit breaker have not tripped. Contact your local authorized dealer or Maruson if condition persists.
59	Charger failed	UPS charger board will not charge the batteries anymore. Contact your local authorized dealer or Maruson to replace the charger board.
60	EPO function is active	Connect the EPO switch to disable this function and ensure the connection is secure. If connected to EPO cable, check if EPO cable needs to be replaced. Replace with one no more than 350 feet and has a resistance greater than 10 ohms.
	Batteries	Check battery connections are properly connected and any battery cutoff

 Flashing icon	disconnected or low voltage	devices such as circuit breaker have not tripped. Check the batter voltage. If under 12Vdc, replace all batteries as they have reached the end of lifespan.
	Charger failed	UPS charger board will not charge the batteries anymore. Contact your local authorized dealer or Maruson to replace the charger board.

Note: When the UPS fails, the Fault/Warning icon will appear on the LCD and backlight will change to red while the alarm beeps continuously.
Note: When the UPS detects a fault, it will stop the power conversion of mains and battery.

8.2. ADDITIONAL TROUBLESHOOTING CONDITIONS

Condition	Possible Cause	Solution
UPS not supplying power to connected equipment (when mains input is normal)	No power to outlets	When the UPS is first connected to an AC power source, the UPS will be in Standby Mode, which does not supply power to the outlets. The UPS must be in Normal, Bypass, or Battery Modes to supply power to the outlets. Press the power button for 3 seconds to turn on the UPS.
	Input breaker tripped	Turn off the UPS. Reset the circuit breaker. Remove non-critical loads until total capacity is within UPS capacity range. Turn the UPS on. Repeat if necessary.
	EPO switch is open	Connect the EPO switch to disable this function and ensure the connection is secure. If that does not work, check the EPO settings of the UPS and change to one suitable for your use from the LCD panel.
The UPS does not provide the expected battery time.	Batteries are not fully charged	Keep UPS connected to utility power for at least 10 hours to recharge the batteries.
	UPS overloaded	Turn off the UPS. Reset the circuit breaker. Remove non-critical loads until total capacity is within UPS capacity range. Turn the UPS on. Repeat if necessary.
	Batteries aged	Replace the batteries with a new set.
	Charger failed	Check the charger. Contact your local authorized dealer or Maruson.
UPS does not turn ON after pressing the power button	Did not turn on properly	Make sure to press the power button for 3 seconds to turn the UPS on. You will hear an audible beep after 3 seconds indicating the UPS is on.
	The input source is not connected correctly	Check the input connection is securely connected and verify there is power at the source. Press the ON button for 2 seconds.
	Battery is disconnected, battery voltage is too low, or charger failed	Check the LCD for any additional status information. Check the battery connections. Start a battery test. Contact your local authorized dealer or Maruson support if above solutions do not resolve issue.
	The EPO switch is active or connector is missing	Check the rear of the UPS to verify the EPO connection. Secure EPO tab if loose. Check the UPS settings from the Settings menu. See Settings section for additional information.
	UPS fault	Contact your local authorized dealer or Maruson.
The UPS does not switch over to Battery Mode	UPS operating in Bypass Mode.	UPS must be set to Normal Mode or ECO Mode to switch over to Battery Mode when utility power failure occurs.
Battery bars always indicate charging	No issue	The UPS will always be charging the internal batteries under normal conditions as this is a double-conversion UPS.

Fan(s) always on	No issue	The fan(s) will always be on to prevent overheating. If the fan is more active than usual, check the fans for dust buildup. Use compressed air to gently remove dust build-up.
Battery self-test does not work	Low battery voltage	If this is a new unit or has been sitting in storage for a while, allow the UPS to charge for 24 hours before running a battery test.

9. MAINTENANCE

CAUTION: Risk of electric shock. Read the Battery Safety section of this manual before continuing with any maintenance, servicing, or replacement.

9.1. BATTERY MAINTENANCE

1) This UPS employs maintenance-free valve-regulated sealed lead-acid (VRSLA) batteries. It is crucial to regularly charge these batteries to optimize their lifespan.
2) Under standard operating conditions, the batteries typically last between 2 to 5 years. To maintain optimal performance and reliability, it is recommended to replace the batteries before their functionality diminishes.
3) Battery replacement should be conducted uniformly, replacing all batteries simultaneously. It is imperative that the replacement batteries match the original ones in type and quantity to uphold safety standards and performance.
4) If the UPS or EBB are in storage, it is advised to charge them every 3 months to preserve battery lifespan and prevent potential irreversible damage. The charging duration should be a minimum of 10 hours.
5) Various environmental factors, including elevated ambient temperatures, high humidity, poor quality mains power, insufficient UPS ventilation, and frequent discharges, can contribute to a reduction in battery life.

9.2. BATTERY REPLACEMENT

Review all warnings, cautions, and notes in this manual before attempting to replace the batteries. Ensure all connected equipment and the UPS are off before attempting any type of battery replacement.
Note: Check the battery voltage rating marked on the rear panel before replacing any batteries. Using the wrong battery voltage may cause permanent damage of the UPS & EBB.
Note: Never connect or disconnect EBBs when the UPS is running on battery power.

9.3. UPS & EXTERNAL BATTERY BANKS (EBB) BATTERY REPLACEMENT

1) Turn off and disconnect all connected equipment from the UPS, ensuring the EBB is detached from the UPS, and the UPS is unplugged from the AC power source.
2) Unscrew the screws around the unit and carefully remove the body cover of both the UPS and EBB. If applicable, remove the battery bar.
3) Disconnect the black (negative, -) battery wire from the first battery, then proceed to disconnect the jumper wires linked to the negative (-) battery terminals for all batteries. Next, disconnect the positive (+) jumper wires from the positive (+) battery terminals. The red (positive, +) battery wire should be disconnected last.
4) Remove all depleted batteries and replace all of them with new ones. Avoid reusing old batteries or incorporating used batteries during the replacement process.
5) Initiate the reconnection process by attaching the red (positive, +) battery wire first. Follow this by connecting the jumper wires to the positive (+) battery terminals, and then attach the jumper wires to the negative (-) battery terminals. Finally, connect the black (negative, -) battery wire.
6) Reassemble the unit in reverse order.

Note: Only use the same type and voltage of batteries for replacement.
Note: Prior to replacing any batteries, check the battery voltage rating marked on the rear panel. Using batteries with the incorrect voltage may result in permanent damage to the UPS and EBB.

10. TRANSPORTATION, STORAGE, AND DISPOSAL

10.1. TRANSPORTATION

Please transport the UPS only in the original packaging with the included foam inserts. Disconnect internal batteries for transportation.

10.2. STORAGE

If the UPS or external battery banks are to be stored for an extended period, ensure that the UPS is fully charged before placing it in a dry, dust-free, well-ventilated room away from direct sunlight. Recharge the UPS and EBB batteries every three months to preserve their lifespan. If you plan to use the UPS after storage, allow it to charge for a minimum of 10 hours before usage. The recommended storage temperature is between 5°F to 113°F (5°C to 45°C).

10.3. DISPOSAL

- Consult your local recycling or hazardous waste center to learn about the correct disposal procedures for spent batteries and waste electric or electronic equipment (WEEE).
- This product utilizes lead-acid batteries, classified as hazardous waste material, and should be appropriately disposed of at a local battery recycling center or in compliance with local regulations. Avoid disposing of batteries with regular waste.
- Under no circumstances should batteries be disposed of in a fire, as they may explode. Refrain from opening or mutilating batteries, as the released electrolyte can be harmful to the skin and eyes and may be toxic.
- Recycle the packaging that accompanied this product.

11. PRODUCT SPECIFICATIONS

11.1. UPS SPECIFICATIONS*

Model	**TAC-TW1KB**	**TAC-TW1K**	**TAC-TW1KL**	**TAC-TW2KB**	**TAC-TW2K**	**TAC-TW2KL**	**TAC-TW3KB**	**TAC-TW3K**	**TAC-TW3KL**
Capacity	1000VA / 900W			2000VA / 1800W			3000VA / 2700W		
Input									
Power System	Single-phase (1Ph + N + G)								
Current (Max.)	10A			16A			24A		
Voltage	100 / 110 / 120 / 125Vac								
Voltage Range	100 - 145Vac at full load / 65 - 145Vac at half load								
Frequency Range**	50Hz system: 46 – 54Hz / 60Hz system: 56 – 64Hz								
Input Power Factor	≧0.99 @ full load								
Bypass Voltage Range	95 – 130Vac (default) / 75 – 145Vac (max)								
Output									
Power System	Single-phase (1Ph + N + G)								
Voltage	100 / 110 / 120 / 125Vac (sine wave)								
Frequency	Normal Mode: 50/60Hz ± 4Hz (synchronized to mains input)								
	Battery Mode: 50/60Hz ± 1%								
THD	<2% (linear load)								
Voltage Regulation	≦1%								
Overload Threshold	105% to 125%: up to 60 seconds; 126% to 150%: up to 30 seconds								
Load Crest Ratio	3:1								
Efficiency									
Normal Mode	88%			89%			90%		
Battery Mode	85%			86%			87%		

ECO Mode	>95% @ full load with batteries fully charged								
Transfer Time									
Normal < > Battery	0ms								
Inverter < > Bypass	<4ms								
ECO → Battery	10ms								
Battery & Charger at 77ºF (25℃)									
External Battery Bank Option	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Recharge Time	5 hours to 90% capacity for standard UPS; varies if external battery banks are used								
Charging Current	1A for Basic (‘B’) and Standard models / 4A for Extended Runtime (‘L’) models								
Discharging Current	30A (max.)			30A (max.)			40A (max.)		
Environment									
Operating Temperature	32°F to 104°F / 0°C to 40°C The battery longevity is best when operating at 77°F / 25°C.								
Storage Temperature	5°F to 113°F / -15°C to 45°C								
Elevation	<1000m at full load <2000m at 90% load <3000m at 80% load Do not use above 3000 meters								
Humidity	<97% non-condensing								
Protection Class	IP20 rating								
Noise Level	<50 dBA in Normal Mode								
Physical									
Configuration	Tower								
Product Weight (lb/kg)	21.16 / 9.6	25.79 / 11.7	10.58 / 4.8	39.02 / 17.7	42.33 / 19.2	18.08 / 8.2	51.59 / 23.4	56.22 / 25.5	19.84 / 9.0
Dimensions (DWH) (in/mm)	12.80 x 5.67 x 8.82 / 325 x 144 × 224			14.49 x 7.48 x 12.72 / 368 x 190 × 323			14.49 x 7.48 x 12.72 / 368 x 190 × 323		
Inlet Connection	NEMA 5-15P			NEMA 5-20P			NEMA L5-30P		
Input Cable Length	5ft / 1.52m								
Output Connection	(4) NEMA 5-15R			(4) NEMA 5-15R + (2) 5-15/20R + (1) Terminal			(4) NEMA 5-15R + (4) 5-15/20R + (1) Terminal		

*Specifications outside North America or for custom orders will vary. Check the product label on your unit for your model’s specifications.

11.2. BATTERY SPECIFICATIONS

Model*	Internal Batteries	Total Battery Voltage Rating	Charging Current	Rated Charging Voltage	Backup Time (Half Load)	Maximum EBB Connection
TAC-TW1KB	(2) 12V / 7Ah	24Vdc	1A	27.3Vdc	10 minutes	N/A
TAC-TW1K	(3) 12V / 7Ah	36Vdc	1A	41Vdc	15 minutes	3
TAC-TW1KL	N/A	36Vdc	4A	41Vdc	Varies by EBB	6
TAC-TW2KB	(4) 12V / 7Ah	48Vdc	1A	54.6Vdc	8 minutes	N/A
TAC-TW2K	(4) 12V / 9Ah	48Vdc	1A	54.6Vdc	9.5 minutes	3
TAC-TW2KL	N/A	72Vdc	4A	81.9Vdc	Varies by EBB	6
TAC-TW3KB	(6) 12V / 7Ah	72Vdc	1A	81.9Vdc	8.5 minutes	N/A
TAC-TW3K	(6) 12V / 9Ah	72Vdc	1A	81.9Vdc	11 minutes	3
TAC-TW3KL	N/A	72Vdc	4A	81.9Vdc	Varies by EBB	6

*'B' models do not have external battery connectors and therefore cannot be used with external battery banks. 'L' models are Extended Runtime models and do not have internal batteries. An EBB is required for battery backup function for 'L' models.

11.3. EXTERNAL BATTERY BANK (EBB) SPECIFICATIONS***

	TAC-TW1KBB	TAC-LV2KBB	TAC-LV3KBB
For Power Ratings	1000VA	2000VA	3000VA
Battery Quantity & Size	(6) 12V / 9Ah	(12) 12V / 9Ah	(12) 12V / 9Ah
Battery Voltage	36Vdc	48Vdc	72Vdc
Configuration	Tower		
Weight	38.5 lb / 17.5 kg	84.9 lb / 38.5 kg	84.9 lb / 38.5 kg
Dimensions (DWH) (in/mm)	14.02 x 5.67 x 8.98 / 356 x 144 x 228	15.71 x 7.48 x 12.87 / 399 x 190 x 327	15.71 x 7.48 x 12.87 / 399 x 190 x 327
Input Connection	Anderson	Anderson	Anderson
Input Cable (in/cm)	23.62 / 60	23.62 / 60	23.62 / 60
Output Connection	Anderson Connector	Anderson Connector	Anderson Connector

***Do not use an EBB not intended for use with your specific UPS model or third-party EBBs.

11.4. STANDARDS

Safety		UL1778	
EMC	Conduction	FCC Part 15	Class A
	Radiation	FCC Part 15	Class A

11.5. FCC CLASS A RADIO FREQUENCY WARNING

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are intended to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding this FCC SDoC declaration, please use the following contact information:

Maruson Technology Corporation
200 S 5th Ave
City of Industry, CA 91746 USA
714-870-6888

11.6. CA PROPOSITION 65 WARNING

WARNING: Lead-acid batteries, battery posts, terminals, and related accessories can expose you to chemicals including lead and lead compounds, which are known to the State of California to cause cancer and birth defects, or other reproductive harm. For more information go to www.p65warnings.ca.gov.

12. CUSTOMER SUPPORT

If you have any questions or issues with your UPS, contact us for or your local authorized distributor. Please have the following information for support:

- Model number and serial number of the product
- Duration you have had your unit
- Date of failure or problem
- LCD panel status & alarm status
- Mains power condition
- Connected equipment type and capacity for each equipment
- Environment temperature and ventilation status
- If any external battery packs used with the UPS
- Other symptoms or information to help us diagnosis the problem and solution
- Your contact information

If repair is required, you will be provided a Return Material Authorization (RMA) number. Do not ship without this number displayed on the outer packaging or it will be refused at delivery. Any damages or lost shipments are not covered under warranty.

13. WARRANTY

The 1kVA / 2kVA / 3kVA Tacoma TW (individually and collectively, the “Product”) includes Limited Warranties Maruson Technology Corporation (referred to herein as “Maruson”) offers for customers in the United States and Canada. These limited warranties are only for the original end-user (“Original Purchaser”). Please retain a copy of your receipt as proof of purchase. All Connected Equipment Warranty claims must be made within ten (10) days of occurrence. If you need to file a claim, fill out the RMA form online from the Maruson website first. Terms and conditions apply. Visit our website for details. To register your product, go to www.MarusonUSA.com.

Maruson warrants the Original Purchaser of this Product that the product is free from defects in materials and workmanship under normal use and service for which the product was designed for a period of two (2) years for Limited Product and two (2) years for Limited Battery Warranty. Additionally, this Product includes two (2) years Limited Connected Equipment Warranty for customers located in the US or Canada with Product Registration. The limited warranties start date is based on the date of purchase. If, in the opinion of Maruson, the UPS or battery is defective and defective within the scope of this warranty, Maruson’s sole obligation will be to repair or replace the defective UPS or battery. No salesperson, employee, or agent of Maruson is authorized to add to or vary the terms of the warranties. By using the Product, you agree to the terms of the Limited Warranty. The duration of warranty coverage does not pause, restart, or extend if the Product is with Maruson or any of its dealers for evaluation, servicing, repairs, or if a replacement part or unit is provided.

The Connected Equipment Warranty is a Limited Warranty and only available to customers in the United States and Canada who register their Product within fifteen (15) days of the invoice date, subject to the limitations and exclusions set forth herein and only covers claims from damage of any properly

connected equipment due to failed AC protection circuitry from a transient surge and only available to customers who purchase and use the UPS in the US or Canada. Furthermore, the Connected Equipment Warranty is not deemed “first dollar” coverage. It is secondary. If you have any other source of payment for your loss, such as insurance, another warranty, or an extended warranty or purchase protection plan (“Primary Coverage”), Maruson will pay only to the to the extent that the Primary Coverage does not cover the loss. Maruson’s obligation is reduced by any amounts that you are entitled to recover from the Primary Coverage, whether or not you make a claim for recovery under the Connected Equipment Warranty. The cumulative limit to be paid by Maruson under this warranty is up to (one hundred United States Dollars) USD 100.00.

Maruson will spend to repair or replace the damaged connected equipment, at Maruson’s option, an amount equal to the fair market value of the damaged equipment or the original purchase price of the equipment, whichever is less. The fair market value of the equipment shall be the current value for the equipment specified in the most recent edition of the Orion Blue Book by Orion Research Corporation or on eBay. Whenever claims are settled, Maruson reserves the right to be subrogated under any existing insurance policies the claimant may have.

If any payment is required as part of a service, Maruson’s obligations under this warranty are expressly conditioned upon receipt by customer of all payments due to it (including interest charges, if any). During such time as Maruson has not received payment of any amount due to it for the Product, in accordance to the contract terms under which the Product is sold, Maruson shall have no obligation under this warranty.

WHAT IS NOT COVERED

Maruson shall not assume responsibility for costs, damages, or repairs arising from or connected to the following:

- Warranty coverage for units purchased from unauthorized dealers, second-hand units, or units that have been transferred.
- Inappropriate usage, operation, handling, tampering, misuse, abuse, lack of maintenance, or use of the Product or connected equipment contrary to the User Manual.
- Damages resulting from fire, flood, wind, rain, rising water, theft, vandalism, lightning, acts of God, plumbing leakage or breakage, harsh chemical action, intentional misconduct, accidents, dropping the device, abuse, abnormal conditions, or unauthorized modifications.
- Normal wear and tear, encompassing regular wearing parts such as the power cord, or damage attributable to external harm or abuse.
- Damage from lightning or power transients, excluding damage due to AC power line transients, spikes, or surges on properly installed, grounded, and code-compliant 120Vac power lines; transient surges or spikes on standard telephone land lines, PBX telephone equipment, or base 10T ethernet lines when correctly installed.
- Economic loss or special, indirect, or consequential damages, including, but not limited to, loss or damage to data, records, software, or the restoration thereof, regardless of whether attributed to product failure.
- Damage resulting from use not in accordance with the rating plate.
- Units with altered or removed serial numbers.
- Reduction in battery discharge time due to battery age, usage, or improper maintenance.
- Costs associated with packaging and shipping from the customer to Maruson for warranty service.
- Use in aquariums or high-risk activities categorized as hazardous environments demanding fail-safe performance, where Product failure could directly lead to death, personal injury, severe physical or property damage, or affect the operation or safety of any medical or life support device.

DISCLAIMER OF WARRANTIES, INCLUDING WARRANTY OF MERCHANTABILITY AND WARRANTY OF FITNESS FOR PARTICULAR PURPOSE: EXCEPT AS SPECIFICALLY SET FORTH HEREIN, NO WARRANTY OR REPRESENTATION, EXPRESS, IMPLIED, OR STATUTORY, IS MADE AS TO THE UPS. EXCEPT AS EXPRESSLY SET FORTH HEREIN, MARUSON AND/OR ITS

AFFILIATES EXPRESSLY DISCLAIMS, WITHOUT LIMITATION, ANY STATUTORY WARRANTIES, AND ALL IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL MARUSON, ITS AFFILIATES, ASSOCIATES, DEALERS, AGENTS OR SUPPLIERS OR THEIR RESPECTIVE OFFICERS, DIRECTORS, EMPLOYEES, AND ASSIGNS BE LIABLE FOR INCIDENTAL, SPECIAL, DIRECT, INDIRECT, EXEMPLARY, PUNITIVE, SPECIAL, CONSEQUENTIAL, OR MULTIPLE DAMAGES SUCH AS, BUT NOT LIMITED TO BUSINESS INTERRUPTION, LOST BUSINESS OR PROFITS, PERSONAL INJURY, LOSS OF ABILITY TO USE THIRD-PARTY PRODUCTS OR SERVICES, FAILURE TO MEET ANY DUTY INCLUDING OF GOOD FAITH OR REASONABLE CARE, NEGLIGENCE, OR LOSS OF DATA ARISING OUT OF THE SALE, USE, OR INABILITY TO USE OF ANY MARUSON UPS, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL THE TOTAL AGGREGATE LIABILITY OF MARUSON, ITS AFFILIATES, ASSOCIATES, DEALERS, AGENTS OR SUPPLIERS TO YOU FOR ALL DAMAGES EXCEED THE PRICE YOU PAID FOR THE PRODUCT. THIS LIMITATION IS CUMULATIVE AND WILL NOT BE INCREASED BY THE EXISTENCE OF MORE THAN ONE INCIDENT OR CLAIM. THE FOREGOING LIMITATIONS WILL APPLY EVEN IF ANY WARRANTY OR REMEDY PROVIDED FAILURES OF ITS ESSENTIAL PURPOSE. NOTHING IN THIS SECTION SHALL LIMIT THE LIABILITY OF MARUSON IN RELATION TO DEATH OR BODILY INJURIES. THE PRODUCTS LISTED IN THIS WARRANTY ARE NOT FOR USE IN CONNECTION WITH ANY NUCLEAR, MEDICAL, LIFE-SUPPORT, AND RELATED APPLICATIONS.

This warranty provides you with specific legal rights, and additional rights may exist that vary from state to state. In certain states or provinces where the exclusion or limitation of incidental or consequential damages is not permitted, the limitations outlined may not be applicable to you. In the event of inconsistencies between the English version of this warranty and policy and any translated version, the English version will always take precedence.