

TRUE BLUE POWER®

A division of Mid-Continent Instrument Co., Inc.

Advanced Lithium-ion Battery Support Guide



True Blue Power® is a division of Mid-Continent Instrument Co., Inc.

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FOREWORD

This guide provides information intended for use by persons who, in accordance with current regulatory requirements, are qualified to install and maintain this equipment. If further information is required, please contact:

True Blue Power
c/o Mid-Continent Instrument Co., Inc.
Attn: Customer Service Dept.
9400 E. 34th St. N.
Wichita, KS 67226 USA
Phone 316-630-0101
Fax 316-630-0723
www.truebluepowerusa.com
www.mcico.com

We welcome your comments concerning this guide. Although every effort has been made to keep it free of errors, some may occur. When reporting a specific problem, please describe it briefly and include the guide reference number, the paragraph/figure/table number and the page number. Send your comments to:

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All products produced by Mid-Continent Instrument Co., Inc., including those identified as Mid-Continent Instruments and Avionics or True Blue Power®, are designed and manufactured in Wichita, Kansas, USA.

REVISION HISTORY

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SECTION 1 BATTERY MAINTENANCE

1.1 REQUIRED EQUIPMENT

- Power supply capable of constant potential/voltage
- Electronic load
- Respective Installation Manual

1.2 STORAGE

STORAGE TEMPERATURE: Recommended maximum storage temperature is 30° (86°F). Storage temperatures above 50°C (122°F) are to be avoided.

SHELF LIFE: Stored batteries shall be fully recharged at a minimum every 6 months, except the TB44 shall be recharged every 3 months, following the procedure found in the respective Installation Manual or the below in Section 1.3 CHARGING. If the storage time is unknown, a battery should be fully recharged prior to reaching 20VDC for TS835, TS60, TB17, TB44 or 10% SOC for the TB20/30/40.

1.3 CHARGING

When shipped by air, batteries are at a reduced state-of-charge and shall be fully charged upon receipt. Batteries that are stored shall be fully recharged at a minimum every 3 months, or prior to reaching 20VDC for TS835, TS60, TB17, TB44 or 10% SOC for the TB20/30/40. Always charge with Constant Potential/Voltage.

***** CAUTION *****

If battery is below 20VDC, contact True Blue Power at +1 316.630.0101 before proceeding further. If you attempt to charge a battery and the battery does not accept charge current, contact True Blue Power at +1 316.630.0101 for assistance.

Always charge with Constant Potential/Voltage. For automated method with a battery analyzer, reference example below in 3.2.6.

1.3.1 **TS835**

Charge will take approximately 1.5 hours for a fully discharged unit.

1. Use of a power supply capable of 5A.
2. Apply 28VDC power to primary input pin (power on pin 10, ground on pin 12).
3. Current draw should be 0.15 - 3.5A throughout the charge cycle.
4. When current draw reaches 0.15A or below, unit is fully charged.

1.3.2 **TB17**

Charge will take approximately 1 hour for a fully discharged unit.

1. Set the power supply to constant voltage of 28.8VDC.
2. Limit maximum current of power supply to 17A.
3. Charge battery until charge current tapers to less than 0.7A.

1.3.3 **TB44**

Charge will take approximately 45 minutes for a fully discharged unit.

1. Press and hold Heater Enable/Disable switch on front of battery for 2 seconds. (Green light should illuminate continuously)

***** CAUTION *****

If the light does not illuminate, this indicates the battery is at a very low state of charge or is damaged.
DO NOT ATTEMPT TO CHARGE.

Contact True Blue Power at +1 316.630.0101.

2. Set power supply to constant voltage of 28.5VDC.
3. Limit maximum current of power supply to 60A or less. (Reduced amperage limits will increase charge time)
4. Charge battery until charge current tapers to less than 1.0A.

1.3.4 TB20/30/40

Charge will take approximately 1 hour for a fully discharged unit.

1. Set the power supply to a constant voltage of 28.8VDC.
2. Limit the maximum current of the power supply to 20/30/40A respectively or less. (Reduced amperage limits will increase charge time)
3. Charge the battery until the charge current tapers to less than 1.0A.

SECTION 2 SHIPPING

2.1 BACKGROUND

True Blue Power Lithium-ion battery products are classified as Class 9 HazMat Dangerous Goods and require special processes for shipping. All True Blue Power Lithium-ion batteries may ship via ground or vessel at 100% State of Charge, but per IATA regulations are REQUIRED to be at 30% State of Charge prior to shipping via air and can only be transported via Cargo Aircraft only (i.e. FedEx, UPS, DHL, etc). It is important to only discharge to 30% shortly before shipping to avoid a potential over discharge scenario. Batteries will need to receive full recharge within 30 days to ensure battery health is maintained.

Procedures on properly charging and discharging a battery for shipment can be found in the respective installation manual and, for main ship batteries only, in the following Section 4.1 CHARGING AND DISCHARGING GUIDE.

2.2 CONTINENTAL USA

True Blue Power Lithium-ion battery products are classified as Class 9 HazMat Dangerous Goods and require special processes for shipping. Forms the carrier may request for shipping are available in Sections 4.2 SAFETY DATA SHEETS (SDS) and 4.3 TRANSPORTATION CERTIFICATES. If your facility is within the continental USA but not HAZMAT certified, True Blue Power can support a Product Return Process (PRP). Information can be found in Section 4.4 PRODUCT RETURN PROCESS (PRP). For coordination of a PRP, please contact us by phone at +1 316.630.0101 or by email at productsupport@mcico.com

2.3 OUTSIDE THE CONTINENTAL USA

True Blue Power Lithium-ion battery products are classified as Class 9 HazMat Dangerous Goods and require special processes for shipping. If your facility is NOT certified to ship HAZMAT, please contact a HAZMAT approved carrier for support. Forms the carrier may request for shipping are available in Sections 4.2 SAFETY DATA SHEETS (SDS) and 4.3 TRANSPORTATION CERTIFICATES.

2.4 24/7 EVENT OR ACCIDENT EMERGENCY CONTACT

CHEMTREC
Spill Leak Fire Exposure or Accident
Domestic North America: 800.424.9300
International: +1 703.527.3887 (collect calls accepted)

2.5 MANUFACTURER'S SHIPPING ADDRESS

True Blue Power
9400 E 34th St N
Wichita, KS 67226
Phone: +1 316.630.6000

2.6 DISPOSAL

At True Blue Power, we want to be your long-term partner throughout the life of the product, so we have developed a return program within the USA to assist with proper disposal of True Blue Power Lithium batteries.

- Do not incinerate.
- Battery should be fully discharged prior to disposal.
- End of life batteries should always ship in packaging that complies with related HAZMAT regulations regarding labeling and always using ground services to ship.
- Lithium-ion batteries are classified by the United States government as nonhazardous waste and are safe for disposal as normal municipal waste or can be recycled (Recycling Options noted in Section 2.7 below).
- International options are noted in Section 2.7 below.

2.7 RECYCLING OPTIONS

Lithium-ion batteries do contain recyclable materials and recycling options available in your local area should be considered when disposing of these products. Recycling and disposal are generally regulated by country, state, and local regulations.

USA

BATTERY SOLUTIONS, INC.
800.852.8127
4930 Holtz Dr
Wixom, MI 48393
<https://www.batterysolutions.com/>

RETRIEV TECHNOLOGIES
740.653.6290
8090 Lancaster-Newark Rd NE
Baltimore, OH 43105
www.retrievtech.com

HERITAGE-CRYSTAL CLEAN
877.938.7948

Corporate Office
2175 Point Blvd, Suite 375
Elgin, IL 60123
<http://www.crystal-clean.com>

Europe

Lithium Werks BV
+44 28.9084.5400
Mallusk Enterprise Park
Mallusk Dr
Newtownabbey BT36 4GN
<https://lithiumwerks.com/>

Lithium Werks BV produces lithium iron phosphate batteries, which are categorized as Industrial Batteries under the Waste Batteries and Accumulators Regulations of 2009. We are obliged to take back free of charge, waste industrial batteries supplied to an end user for treatment and recycling. We are required to do this in any calendar year we place new industrial batteries on the market. We agree to undertake the necessary arrangements for the return, proper treatment and recycling of the waste industrial batteries.

G&P BATTERIES LTD
+44 121.568.3200
Crescent Works Industrial Park
Willenhall Road
Darlaston WS10 8JR
United Kingdom
www.g-pbatt.co.uk

UMICORE RECYCLING SOLUTIONS
+32 14.24.50.10
Watertorenstraat 33
B-2250 Olen, Belgium
www.batteryrecycling.unicore.com

RECUPYL
+33 76.77.43.97
Rue de la métallurgie
38420 Domène, France
www.recupyl.com

Canada

RETRIEV TECHNOLOGIES
250.367.9882
9384 Highway 22A
Trail, BC V1R 4W6
www.retrievtech.com

SECTION 3 BATTERY OUTGASSING PROCEDURES

3.1 HAZARDS

A unit will not emit or absorb any gas during storage, transportation, or during normal operating conditions. If a True Blue Power battery experiences a thermal event, you will note white exhaust vapor exiting through the vent, if vented. It is vaporized electrolyte and is very hot. It also contains small amounts of hydrogen fluoride; direct or prolonged exposure is not recommended. Further information is provided on the SDS in Section 4.2 SAFETY DATA SHEETS (SDS).

3.2 EMERGENCY ACTIONS

Section 4.2 RECOMMENDED SAFETY EQUIPMENT provides information on equipment to support safe handling of the batteries in emergencies.

1. Handle all suspect batteries with heat resistant gloves (do not use rubber gloves)
2. Safely disconnect power leading into battery
3. Depending on location of the battery when venting occurs, take following actions:
 - If on aircraft with vent connected, allow battery to complete venting. Installation certification requires a battery installed with vent connected not affect surrounding structures or components in the case of thermal event. Allow battery to exhaust all its energy and cool to ambient temperature. Battery casing will withstand event.
 - If in a well-vented shop or hangar, vacate area and open exterior doors. Allow battery to exhaust all its energy and cool to ambient temperature. Battery casing will withstand event.
 - If in a non-ventilated area, move battery on a cart to well ventilated area or preferably outdoors, turn on ventilation system in battery room. Vacate area affected by vapor. Allow battery to exhaust all its energy and cool to ambient temperature. Battery casing will withstand event.

OR

- Submerge or douse battery with water. Battery should remain submerged until completely cooled, or a minimum of four hours.

3.3 PERSONAL INJURY OR TREATMENT

See SDS (Section 4.2 SAFETY DATA SHEETS (SDS)) for complete information.

If direct contact with skin occurs, wash with soap and water. If a visible injury occurs immediately, seek medical treatment for potential exposure. To dilute the exposure to hydrogen fluoride, Iced Benzalkonium Chloride 0.13% Soaks or Calcium Gluconate gel can be applied.

If inhalation occurs, immediately seek medical treatment for potential exposure. To dilute the exposure to hydrogen fluoride, ensure access to fresh air. Additional care could include oxygen and then possibly 2.5% Calcium Gluconate by Nebulizer.

3.4 POST EVENT ACTIONS

Wear appropriate Personal Protective Equipment (PPE), long gloves and dust mask.

Clean immediately affected area with baking soda and water mixture (1 teaspoon of baking soda to 1 gallon of water) to neutralize possible acidity.

Dispose of any water used to submerge battery: After the battery has cooled, the water must be pH tested to ensure a neutral reading before discarding water in a sanitary sewer (drain, sink, or toilet.) Water must not be discarded outside the building or in a storm sewer.

SECTION 4 DOCUMENTS AND FORMS

4.1 LITHIUM-ION BATTERY SHIPPING PREPARATION PROCEDURE



Shipping
Preparation.pdf

4.2 RECOMMENDED SAFETY EQUIPMENT



Recommended
Safety Equipment

4.3 SAFETY DATA SHEETS (SDS)



SDS

4.4 TRANSPORTATION CERTIFICATES

4.4.1 TS60



TS60 -1 and -2 TC



TS60 -3 AND -4 TC

4.4.2 TS835



TS835 TC

4.4.3 TB17



TB17 TC

4.4.4 TB44



TB44 TC

4.4.5 TB20



TB20 TC

4.4.6 TB30



TB30 TC

4.4.7 TB40



TB40 TC

4.5 PRODUCT RETURN PROCESS (PRP)

The Product Return Process (PRP) is available to customers within the continental United States who do not have HazMat shipping certification. The service does have a nominal fee dependent on materials required and quantity of units being shipped. The PRP can only be used for returns within the continental United States. FedEx is the only shipping method allowed. To initiate the Product Return Process, please contact True Blue Power by phone at 316.630.6000 or by email at productsupport@mcico.com.

Supplies required (per battery):

- Dangerous Goods form
- Dangerous Goods pouch
- 2 copies of SDS sheet (1 inside/1 outside)
- Copy of appropriate instructions (1 copy per order, per part number)
- Class 9 Label
- Address Label with Customer as Shipper
- FedEx Return Ship Label
- Caps for all connectors and terminals
- Packing materials – can be purchased if original packaging is unavailable
 - UN specified box

- Top and bottom foam
- Pink Antistatic bag
- Blue reinforced tape to fit 3 sides for closure

4.6 WARRANTY CLAIM FORM



Warranty Claim Form