

Quick-Start Guide

Aspen 48S, Aspen 48M, and Aspen 24S Batteries



Congratulations on your purchase of an Aquion Energy storage solution! Before installation, read and follow the instructions in this document, consult the product specification sheets, and read all product manuals, which can be found at <http://aquionenergy.com/documentation>.

REQUIRED CONDITIONS AND EQUIPMENT CHECKLIST

No Damage Prior to or Immediately After Accepting Shipment*

- Tip-N-Tell indicator (may be on outside of container or on product) not tripped
- Drop-N-Tell indicator (may be on outside of container or on product) not tripped
- No scraped, punctured, or broken packaging, crating, or product components
- No connectors missing or damaged
- No leaking electrolyte (clear liquid)

*If you find damage, document it on the bill of lading before accepting the shipment. Separately document and photograph all damage, and make a claim with the carrier as soon as possible. Contact your distributor immediately.

Installation Site

- Indoors or enclosed
- Dry, clean, ordinary conditions
- Ambient temperature between -5°C and 40°C
- Battery may emit trace gases during normal operation. See Installation & Operation Manual for gassing and ventilation guidance.
- Level surface with less than fifteen (15) degrees of tilt
- Surface capable of bearing product weight
- Product out of direct sunlight

Movement and Placement Equipment

- Safe lifting attire and equipment
 - Aspen 48S, 24S: crane, hoist, or appropriately sized hand truck
 - Aspen 48M: fork truck, pallet jack, or similar device
- Path to installation site that will not require tipping the battery more than forty-five (45) degrees

Connection and Grounding Equipment

See the Installation & Operation Manual.



Aspen 48S



Aspen 48M



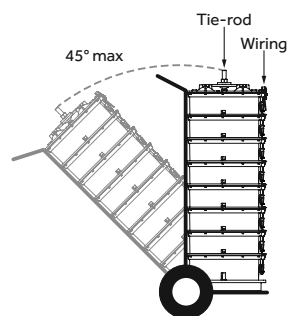
Aspen 24S

ATTENTION:



Batteries ship with less than 2% state of charge and at less than 45 V (48S, 48M) or 22.5 V (24S). Aspen 48M fuses are installed but not connected.

INSTALLATION PROCEDURE

1. 48M: The fuses installed beneath the top cover of the 48M must be connected for the battery to function. Connect the fuses before connecting the battery to your system. Follow the fuse connection instructions in the Installation & Operation Manual.
2. Using safe lifting attire and equipment, place battery upright at the desired installation site. During movement and installation, the 48S or 24S battery may be tilted up to forty-five (45) degrees for up to one hour. If using a hand truck to transport a battery, position the battery on the hand truck so that the wiring faces out, away from the upright frame of the hand truck.
3. Check that the battery's initial voltage is sufficient for power control electronics. Aspen batteries are shipped at less than 2% state of charge and less than 45 V (48S, 48M) or 22.5 V (24S). If, during shipment and installation, the voltage has fallen below the charging threshold of your power control electronics, charge the battery with a separate battery charger.
4. Ground the battery, if required, using the equipment listed in the Installation & Operation Manual.
5. Connect positive and negative connectors. Refer to the Installation & Operation Manual for more information on connection equipment and commissioning.

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NORMAL OPERATING SPECIFICATIONS

Safety


- + Overcurrent protection with installation-appropriate voltage rating:
 - continuous current limit <20 A (48S) or <30 A (24S)
 - short-circuit current interrupt 140 A (48S) or 240 A (24S)
- + Fusing, 48M: the required in-line, 1,000 V, 20 A fuses ARE INSTALLED BUT NOT CONNECTED
- + Electrolyte: non-toxic, non-corrosive, sodium-sulfate-based saltwater with a neutral pH
 - If electrolyte comes in contact with eyes or skin, thoroughly wash out with water.


Charging and Discharging


- + Maximum current: 20 A (48S), 240 A (48M), 30 A (24S)
- + Voltage range after initial charge: 40-59.5 Vdc (48S, 48M), 20-29.7 Vdc (24S)

Operational Limits

- + Ambient temperature: between -5°C and 40°C on a 24-hour average
- + PARALLEL configurations:
 - 48S: Use appropriate branch fusing, which may limit system size. Monitoring recommended for large systems.
 - 48M: Up to 16 48M batteries per inverter or power control system when using Aquion monitoring equipment.
 - 24S: Contact Aquion for large, parallel systems.
 - For instructions on the Aquion SMI (stack monitoring interface) or BMS (battery monitoring system), visit <http://aquionenergy.com/documentation>.
- + SERIES configurations:
 - 48S: not recommended, monitoring required to prevent excess voltage, Aquion must review before installation
 - 48M: up to 1,000 Vdc, Aquion must review before installation
 - 24S: do not configure 24S batteries in series

 **WARNING:** Battery stacks are compressed. Do not disassemble the stacks for any reason. Do not loosen the nut on top of the stacks. Injury, poor battery performance, or damage could result.

 **CAUTION:** The metal parts of the battery terminals are always live. Never place foreign objects or tools in or on the unit. Arcing or fusing could result.

 **CAUTION:** Battery stacks and modules are heavy and must be transported and handled with appropriate precautions to avoid injury or damage.

MAINTENANCE

Aquion batteries do not require maintenance. However, Aquion recommends keeping the following records:

Created at Installation, Updated upon Change

- + Complete AC and DC single-line system diagram
- + System component settings for charge voltage and current

Logged Every 24 Hours

- + Minimum battery voltage
- + Maximum battery voltage
- + Maximum battery current

STORAGE

If your battery system will not be in use for an extended period, Aquion recommends removing all communication and power connections to prevent unintended self-discharge and undetected ground faults. Keep any grounding in place. Products should be stored in the following conditions to avoid permanent damage:

- + Between -10°C and 40°C
- + Indoors or enclosed from sun and water

RECYCLING AND DISPOSAL

AHI batteries are non-toxic and non-corrosive. Do not dump into any sewers, on the ground, or into any body of water where water runs off into open bodies of water. Dispose of according to all federal, state, and local regulations.

SUPPORT

If you need technical support, visit us on our website at <http://aquionenergy.com>.

If you purchased your batteries from an authorized Aquion Energy partner, please contact the partner for assistance.

If you require immediate assistance AND if you purchased your products directly from Aquion Energy, call our support line at +1 412.904.6400. Please have your Aquion Energy order number ready.



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