

Installation & Operation Instructions

For Aquion S-Line and M-Line Battery Products



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 guides, which can be found at

<http://info.aquionenergy.com/customer-portal>.

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
- Ambient temperature between -5°C and 40°C
- Ventilation of either six (6) air changes per hour or 1 cubic foot per minute (CFM) per square foot (0.33 cubic meters per minute per square meter) of room size
- 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
 - S-Line: crane, hoist, or appropriately sized hand truck
 - M-Line: fork truck, pallet jack, or similar device
- Path to installation site that will not require tipping the battery more than fifteen (15) degrees

Connection and Grounding Equipment

See the Technical Manual.



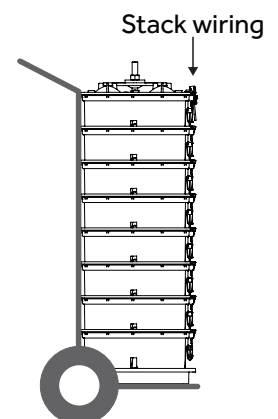
S-Line Battery Stack



M-Line Battery Module

INSTALLATION PROCEDURE

1. Using safe lifting attire and equipment, place battery upright at the desired installation site. The tilt angle of the battery must never exceed fifteen (15) degrees, either during transport or after placement. If using a hand truck to transport a battery stack, position the stack on the hand truck so that the stack wiring faces out, away from the upright frame of the hand truck.
2. Check that the battery's initial voltage is sufficient for power control electronics. Aquion batteries are shipped with a nominal state of charge of less than 20%. 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.
3. Ground the battery, if required, using the grounding equipment listed in the Technical Manual.
4. Connect positive and negative connectors. Refer to the Technical Manual for more information on connection equipment and commissioning.



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NORMAL OPERATING SPECIFICATIONS

Safety

- + Fusing: in-line, 1,000 V, 20 A fuse (on fused battery stack models and all battery modules)
 - If connecting fused or unfused battery stacks in parallel, 20 A branch circuit protection with installation-appropriate voltage rating is required.
- + 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: 17 A for battery stacks, 204 A for battery modules
- + Voltage range: 40–57.6 Vdc after initial charge

Operational Limits

- + Ambient temperature: between -5°C and 40°C on a 24-hour average
- + PARALLEL configurations: up to 192 battery stacks or 16 battery modules per inverter or power control system, when using Aquion monitoring equipment
 - For instructions on the Aquion SMI (stack monitoring interface) or BMS (battery monitoring system), visit <http://info.aquionenergy.com/customer-portal>.
- + SERIES configurations: should include stack- or module-level voltage sensing to ensure batteries do not exceed maximum voltage ranges
 - These configurations should be reviewed by Aquion Energy or an authorized partner.

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
- + Less than 50% SOC (<48 V)

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://www.aquionenergy.com/support>.

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.



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.



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