

*Standard Specification***EPIC Console Series 2.0**

EPIC Console Series 2.0 shall be furnished in accordance with the following specification.

1. Scope

This specification applies to the construction, materials and performance of the EPIC Console Series 2.0. The EPIC Console Series 2.0 provides a means for batteries and electrical equipment to be stored in thermally controlled, individual compartments and allow operator(s) to remotely monitor the system.

2. Applicable Codes

- 2.1. Console shall be an outdoor enclosure of NEMA Type 3R rating which provides protection against falling rain, sleet, snow and external ice formation while allowing safe ventilation of hydrogen gas.
- 2.2. IBC 2012, Seismic certified, essential equipment
- 2.3. CBC 2013, Seismic certified, essential equipment
- 2.4. IEEE 693 High, Seismic certified, essential equipment (1000lbs/section)
- 2.5. IEEE 693 Moderate, Seismic certified, essential equipment (2000lbs/section)
- 2.6. Complies with NFPA 70, National Electric Code
- 2.7. IEEE 1635, Guide for the ventilation and thermal management of batteries for stationary applications

3. Performance Conditions

- 3.1. Standard system shall be able to maintain a steady internal temperature of 68° F to 75° F (+/- 3°F) through an external ambient temperature of -30°F to 120°F.
- 3.2. System shall safely mitigate hydrogen to a level of 2% by volume and a safety factor of 2 times below the minimal explosive limit of 4%.
- 3.3. Each input acknowledged by the System Controller shall have remote monitoring capabilities.

4. Mechanical Design Features

- 4.1. Console design allows for expansion in length.
- 4.2. Console wall is constructed of injected foam insulated panels
 - 4.2.1. Panels measure 74 5/8" in length, 36 1/8" in width, and 2" in depth.
 - 4.2.2. Panels shall be sealed to enclosure frame by EPDM gasketing and mechanical fasteners
- 4.3. Console design shall incorporate a ventilation system where air is allowed to enter each section and exit through the top vents.
- 4.4. Console design shall incorporate a divider so that air cannot be transferred between the battery section and the electrical section (if present).
- 4.5. Console design shall consist of corrosion resistant 316 stainless steel hinges.
- 4.6. All hardware shall be a minimum grade of 18-8 stainless steel.
- 4.7. The console design shall deny water penetration via exterior seams, either by the use of interlocking sheet metal, gaskets or silicon adhesives. Doors shall have a pad lockable, three-point latching system.
- 4.8. Door handles to be made from Polyamide, Cast Zinc, or Stainless Steel
- 4.9. All hardware exterior to the console shall include a non-metallic washer



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- 4.10. Construction of the frame shall be made of painted 1-5/8" P1000H3 Unistrut®.
- 4.11. Console shall be made such that it can be moved by means of a forklift or similar equipment without the battery installed.
- 4.12. Console shall be made such that it can be picked up by a crane
- 4.13. The floor of the console shall have a minimum clearance of 4" from the mounting pad.
- 4.14. The design shall allow for conduit entry via the floor or side of the console base.
- 4.15. Base steel shall be no less than 12 gauge.
- 4.16. Doors and wall panels should be constructed of .032" aluminum.
- 4.17. Console design will securely accommodate AT10.1, AT10 Group II, AT30, and ATevo listed product of 48Vdc up to 250Adc and 130Vdc up to 200Adc, DC Distribution Panel, and Trailer Connection Panel.
- 4.18. Walls and ceiling shall have a minimum insulation value of R-12.
- 4.19. Floors shall have a minimum insulation value of R-12.

5. Battery Rack System

- 5.1 P1000H3 Unistrut® based system or battery rack to accommodate a variation of battery sizes and arrangements.
 - 5.1.1 Each battery support is fully rated to handle the battery weight per standards set forth in section 2, Applicable Codes.
 - 5.1.2 Rails are insulated with an electrolyte resistant nonconductive rubber rail cover.
 - 5.1.3 Battery rail shall be supported by brackets that bolt into Unistrut® and allow for field modification, if required.

6. Electrical Design Specifications

- 6.1 Console electronics section shall house AC distribution for environmental options.
 - 6.1.1 AC distribution shall be able to accommodate optional main breaker
- 6.2 Console wiring uses XLPE wire per HindlePower standard CB0002-00.
- 6.3 Console shall have two outdoor LED indicators, exterior to the cabinet, displaying the system health status (HHS), green indicates proper system operation and red indicates system requires attention.
- 6.4 All critical electrical components, with the exception of ac and dc distribution, shall be replaceable with minimal field wiring.

7. System Control and Monitoring Specifications

- 7.1. A system controller, comprised of a power supply, I/O module, and microprocessor shall control the following enclosure functions:
 - 7.1.1. Enclosure Heating
 - 7.1.2. Enclosure Air Condition
 - 7.1.3. Battery compartment hydrogen purging
 - 7.1.4. Electrical compartment ventilation fan
 - 7.1.5. Battery compartment ventilation fan
 - 7.1.6. Alarming of any equipment with built in communication abilities
- 7.2 The System Controller shall provide red and green indicators for system status.
- 7.3 All communication shall be centralized through the system controller
- 7.4 The system controller shall be able to communicate to external devices through the following methods:
 - 7.4.1 MODBUS
 - 7.4.2 Serial link to ATevo battery charger



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8. Hindle Health® System

The console shall come standard with the Hindle Health® System. The health system monitors the internal environment and system components and will alert via Hindle Health® System status lights when attention is required.

- 8.1. The Hindle Health System shall tell the operator the status or fault condition via a human machine interface (HMI)

9. Finish

- 9.1 Standard colors:
 - 9.1.1 White epoxy powder coat, 49/10103, RAL 9010
 - 9.1.2 ANSI 61 Grey
- 9.2 Custom colors to be offered as an option

10. Drawing and Instruction manuals

- 10.1. Each console shall contain the following standard documentation included:
 - 10.1.1. Drawing list
 - 10.1.2. Outline Drawing
 - 10.1.3. Internal Component Layout
 - 10.1.4. Foundation Drawing
 - 10.1.5. Lifting Diagram
 - 10.1.6. Console Schematic
 - 10.1.7. Connection Diagram

11. Nameplate Information

- 11.1. Model No.
- 11.2. Serial No.
- 11.3. AC Volts
- 11.4. Frequency
- 11.5. Max AC Amperes
- 11.6. Cooling Capacity (If ordered)
- 11.7. Heating Capacity (If ordered)

12. Optional Available Features

- 12.1 Standard drawings consisting of an outline, internal layout, schematic and wiring diagram are provided in the manual.
- 12.2 A customized parts data package, including manufacturer's replacement part number and recommended spares shall be included with the console.
- 12.3 Optional customized drawings are available for user defined console requirements.
- 12.4 The following is a list of optional features available:
 - 240Vac 450 Watt Heaters
 - 20Vac 115cfm Ventilation Fan(s)
 - HVAC System



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- Elevated Legs
- Lifting Plan
- Internal low voltage 12Vdc LED lighting with switch, per section.
- 120Vac 15A GFCI dual outlet
- Battery Spill Containment
- Ground Bus
- HHS integration of 3rd party equipment
- NEMA type 2-hole ground pad
- Main battery cables
- Battery Disconnect
- Rear Doors