



Standard Specification

EPIC Series Console

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

1. General

The EPIC Series Console 2.0 is a Modular Battery/Charger Console that will extend battery life through an environmentally controlled thermal management system. The console provides a means for the operator to remotely monitor the system and confirm compliance with NERC requirements through the following features:

- 1.1. Intrinsically safe hydrogen mitigation system incorporating separate regions for battery and electronics modules with a directional ventilation system ensuring hydrogen from the battery region never reaches the electronics section.
- 1.2. Limitless modular expansion of both the battery region and electronic region which is capable of housing battery chargers and related electrical and electronic devices.
 - 1.2.1. An option to double in depth.
- 1.3. Simplify maintenance by allowing easy access to internal components and system without any specialized tools.

2. Applicable Codes

- 2.1. Cabinet 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, Seismic certified, essential equipment
- 2.5. Complies with NFPA 70, National Electric Code

3. Mechanical Design Features

- 3.1. Console design allows for expansion in length and depth.
- 3.2. Console will have provisions for a NEMA type ground pad if requested.
- 3.3. Console design shall incorporate a ventilation system where air is allowed to come in from the bottom of each section and be expelled through the top vents.
- 3.4. Console design shall incorporate a divider so that air cannot be transferred between the battery modules and the electrical modules.
- 3.5. Console design shall consist of corrosion resistant 316 stainless steel hinges.
- 3.6. All hardware shall be a minimum grade of 18-8 stainless steel.
- 3.7. Door handles to be made from Polyamide.
- 3.8. All hardware exterior to the console shall include a non-metallic washer.
- 3.9. Construction of the frame shall be made of painted 1 ^{5/8}" P1000H3 Unistrut®.
- 3.10. Console shall be made such that it can be moved by means of a forklift or similar equipment without the battery installed.
- 3.11. The floor of the console shall have a minimum clearance of 4" from the mounting pad.
- 3.12. The design shall allow for conduit entry via the floor or side of the console base.



- 3.13. The console design shall allow for no water penetration of exterior seams, either by the use of interlocking sheet metal, gaskets or silicon adhesives. Doors shall have a pad lockable, three-point latching system.
- 3.14. Base steel shall be no less than 12 gauge.
- 3.15. Doors and wall steel shall be no less than 18 gauge.
- 3.16. 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 the Trailer Connection Panel.
- 3.17. Walls and ceiling shall have a minimum insulation value of R-12.
- 3.18. Floors shall have a minimum insulation value of R-6.
- 3.19. Console design should be modular in length and depth allowing for personnel entry if required.

4. Battery Rack System

- 4.1 P1000H3 Unistrut® based system or battery rack to accommodate a variation of battery sizes and arrangements.
 - a. Each battery support is fully rated to handle the battery weight per IBC 2012 standards. Rails are insulated with an electrolyte resistant nonconductive rubber rail cover.
 - b. Battery rail shall be supported by brackets that bolt into Unistrut® and be able to be modified in the field.

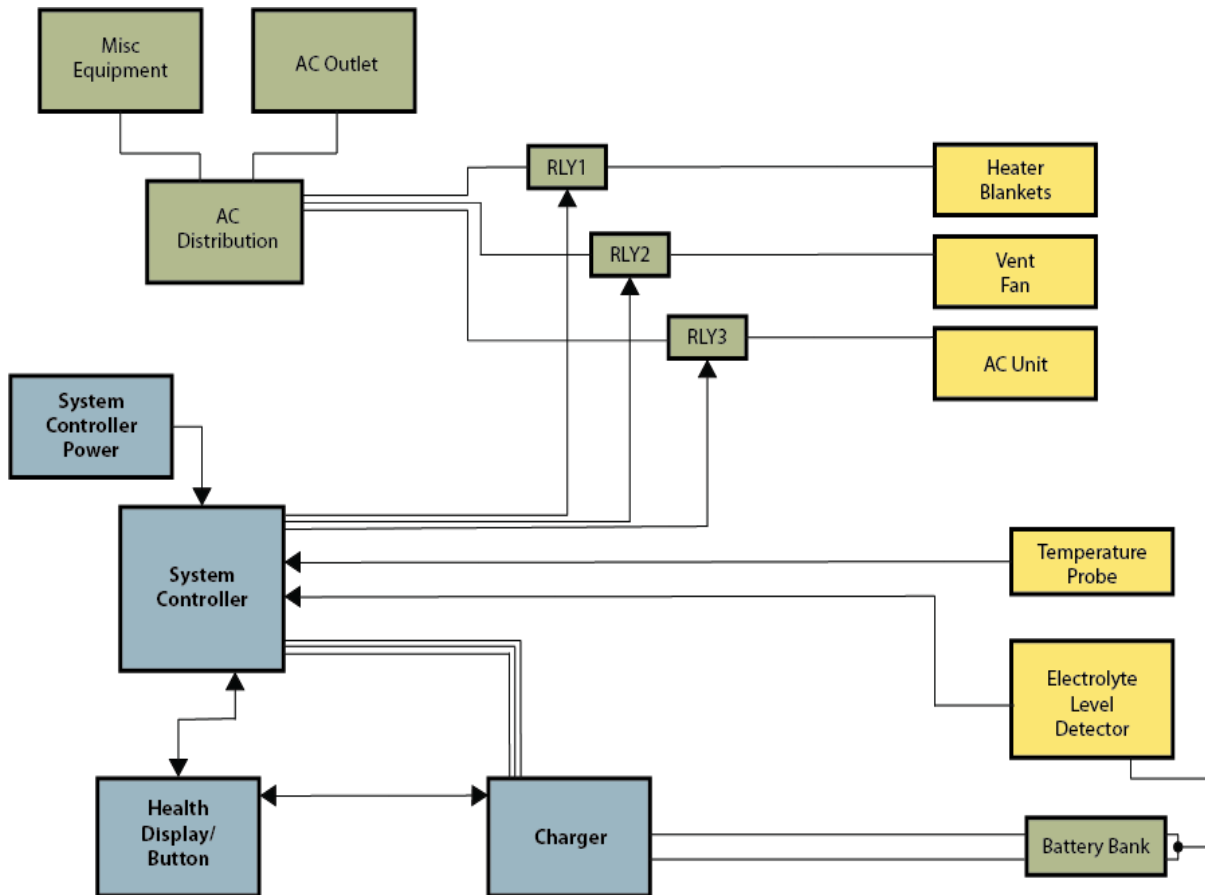
5. Electrical Design Specifications

- 5.1 Console electronics section shall house AC distribution for environmental options.
- 5.2 Console wiring uses XLPE wire per HindlePower standard CB0002.
- 5.3 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.
- 5.4 All critical electrical components, with the exception of AC and DC distribution, shall be replaceable with minimal field wiring.

6 System Control and Monitoring Specifications

- 6.1 Microprocessor based System Controller shall be incorporated into the console for control and monitoring of basic system functions.
- 6.2 System Controller Status
The microprocessor based System Controller shall provide red and green indicators for system status.

6.3. Block diagram



6.4 System Controller Inputs

The following shall be inputs from the system to the System Controller:

- Temperature probe
- Fan on/off
- AC unit failure
- Charger common alarm
- Provisions for common alarm from 3rd party equipment dry contacts

6.5 System Controller Outputs

The following shall be outputs from the System Controller to the system:

- Heater relay control
- Vent fan relay control
- AC unit controller relay control
- Common alarm
- User specified custom outputs



6.6 Communications

The microprocessor based System Controller shall be capable of communicating with components within the console and to external devices via the following:

- MODBUS
- Serial link to ATevo battery charger
- All communication shall be centralized through the microprocessor based System Controller

6.7 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.

7 Finish

- 7.1 Standard finish, white epoxy powder coat, 49/10103, RAL 9010
- 7.2 Custom colors to be offered as an option

8 Performance Parameters

- 8.1 Standard system shall be able to maintain a steady internal temperature of 70° F through an external ambient temperature of -30 F to 120° F.
- 8.2 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%.
- 8.3 Each feature controlled by the System Controller shall have remote monitoring capabilities.

9. Optional Available Features

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