



# NOVATION ENERGY

Battery Management Solutions for  
Energy Storage



Battery Management Systems ▪ Stack Switchgear  
Energy Controllers ▪ Custom Energy Storage Solutions

# NUVATION ENERGY

Over 1000 projects since 1997

- Offices in Silicon Valley, USA and Waterloo, Canada
- Electronic product design division founded in 1997
- Battery management solutions since 2008
  - High-Voltage BMS: 12-1250VDC
  - Low-Voltage BMS: 11-60VDC
  - Stack Switchgear
  - Grid Battery Controller
- Custom energy management solutions
- ESS systems design



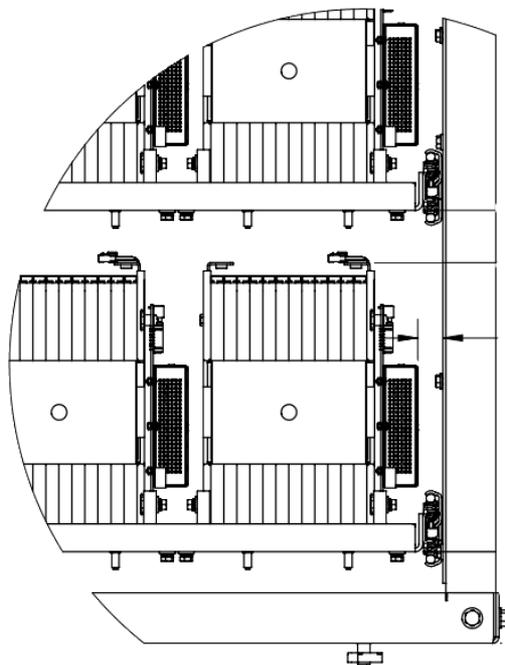
WATERLOO, ON, CA



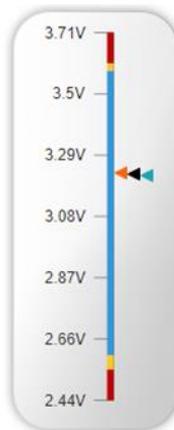
SUNNYVALE, CA, USA

# Battery Management Solutions

## Cell Management



Cell Voltage



◀ MAX: 3.224 V

🔍 C11:C11

◀ AVG: 3.22 V

◀ MIN: 3.215 V

🔍 C11:C12

Temperature



◀ MAX: 25 °C

🔍 C11:C2

◀ AVG: 20 °C

◀ MIN: 15 °C

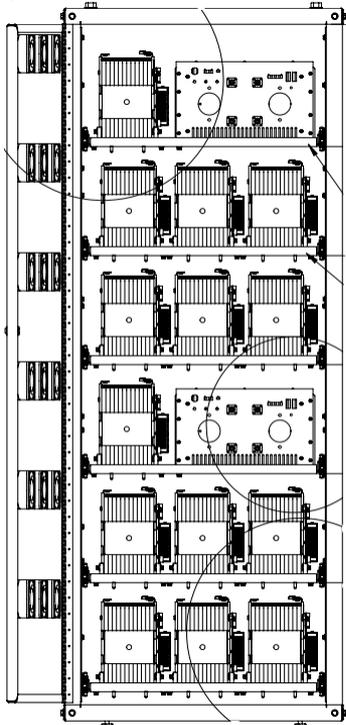
🔍 C11:C1



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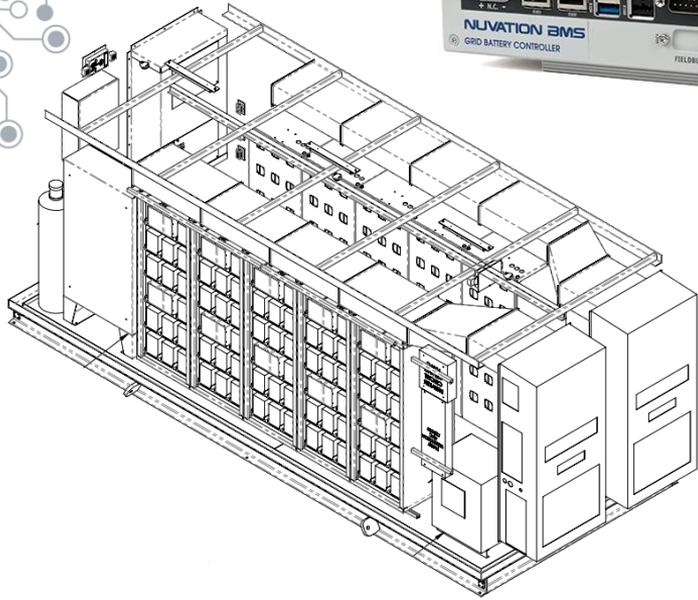
# Battery Management Solutions

## Stack Management



# Battery Management Solutions

## ESS Management



# Battery Management Solutions

## UL 1973 Recognized Component

# FUNCTIONAL SAFETY

**UL**<sup>®</sup>  
**C** **US**

The Nuvation Energy High-Voltage BMS Power Interface, Stack Controller, and Cell Interface modules are UL Recognized for use in **UL 1973** and **UL 9540** certifiable energy storage systems.



**NUVATION**  
**ENERGY**

# OVER 100 INSTALLATIONS WORLDWIDE



# NUVATION ENERGY

## Battery Management System Clients



# NUVATION GARAGE: TECHNOGECKO

## 2<sup>nd</sup> Life Hybrid ESS and Mutant EV



- Now two vehicles, added Dance Floor with pair of 14' stainless steel poles
- Vehicles split apart to get through city streets and then recombine on playa
- Spiers provided second life Nissan leaf modules
- Motive pack: 80kwhr 8 stack system of 14s8p, 52V, Nuvation Low Voltage BMS
- Plug in hybrid: onboard 100G propane tank for generator and fire effects
- Under harsh environment testing in Black Rock desert, managed charge and discharge current within temperature and voltage limits

# NUVATIONENERGY

PROVIDING POWER ENGINEERING  
SOLUTIONS SINCE 1997

*Accelerating  
Energy Storage*



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SOFTWARE



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