



# The New Era: Fortress Power Avalon



# About Fortress Power

We manufacture the **highest quality energy solutions** at The Automotive Quality Standard for residential and commercial applications (5kWh-4.2MWH)

- U.S. Headquarters based in Langhorne, PA, plus 3 Offices: Asia, California, and Puerto Rico
- Founded in 2016
- Backed-up by Private Equity Partner
- 30,000+ Installs in US, Canada, Central Caribbean, South America, Europe, Middle East and Africa
- Key Lithium Battery Supplier for numerous Government & Utility Entities



# Fortress Power Avalon High Voltage Product Line

# Fortress Power Avalon Smart Whole Home Solution

- Whole Home Backup
- 200A Passthrough
- Outdoor Rated
- Load Shedding
- Grid-tied / Off-grid
- AC/DC Coupled Solar
- Integrated RSD Transmitter
- Generator Compatible
- Wireless Programming and Monitoring
- Optional (Level 2) EV Charger
- Up to 58.8kWh of Storage



# Avalon HV Battery

## ***Stackable Design for Easy Expansion***

- Ultra-thin space saving design
- 14.7 - 29.4 kWh per stack (scalable up to 117kWh)
- Sealed battery protects against dust, water, and humidity
- **Active heating & cooling** temperature management for outdoor installs
- 8,000+ cycle life with tier 1 automotive grade Lithium Iron Phosphate (LFP) battery
- Stackable for easy installation & logistics



# Avalon HV Battery

## Battery Management Module

- Contains BMS
- Contains active heating management system
- Weighs 30.8lbs

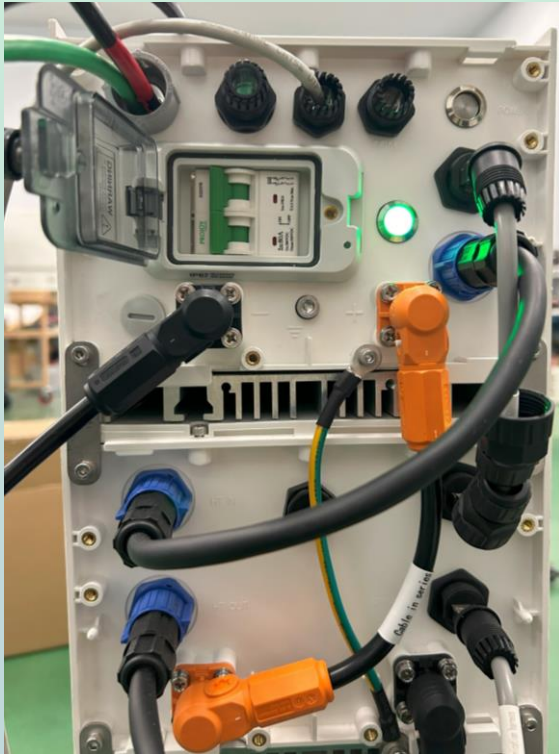
## Battery Modules

Each Module:

- Is connected in series
- Has its own active heating, passive cooling and fire suppression



# Avalon HV Battery



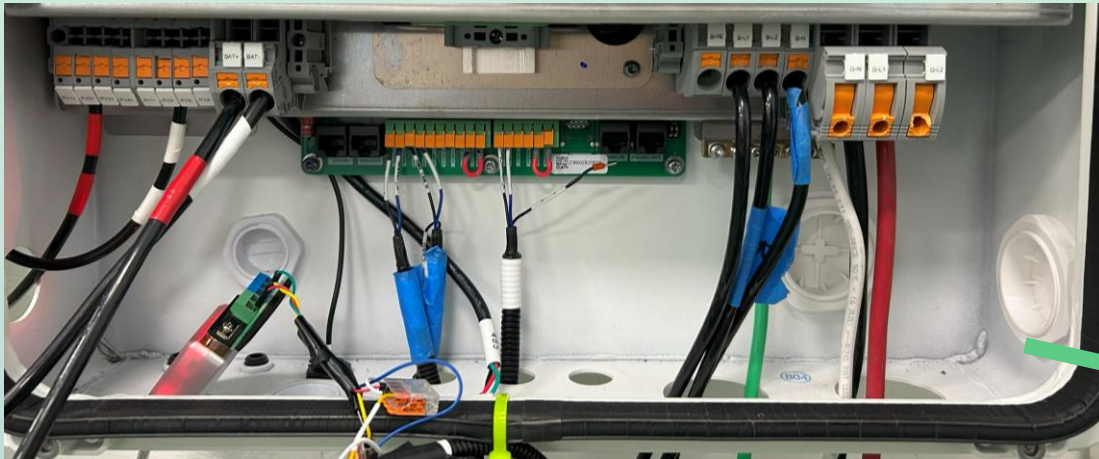
# Avalon Inverter

## *High voltage DC input for higher efficiency*

- 7.6kW or 11.4kW hybrid inverter
- Up to 4 MPPTs for maximum efficiency (max 18.24 kW PV array)
- AC or DC coupled for flexible design and retrofitting
- Integrated rapid shutdown transmitter



# Avalon Inverter



# Avalon Smart Energy Panel

## *High voltage DC input for higher efficiency*

- Combines 200A pass-through, grid transfer switch, and load management in one
- Combines multiple solar arrays, battery inverters, EV charger, and generator
- Integrated load control (12 circuits), HVAC, pump, water heater, etc.
- No separate emergency panel needed – Intelligently manages large loads in the house to stop the inverter from tripping off.
- No transfer switch needed. Safely connect and operate a gas generator without the need for a separate transfer switch.
- No separate AC combiner box needed. AC couple an existing PV installation or add an EV charger directly to the Avalon Smart Energy Panel.



# Avalon Smart Energy Panel

Max AC amperage from the 11.4kW inverter:  
 $11.4 \times 1000 / 240 = 47.5A$

120% of 200A busbar:  
 $200 \times 1.2 = 240$

Max total amperage (grid and inverter):  
 $47.5 + 200 = 247.5$

What breaker to use for grid?

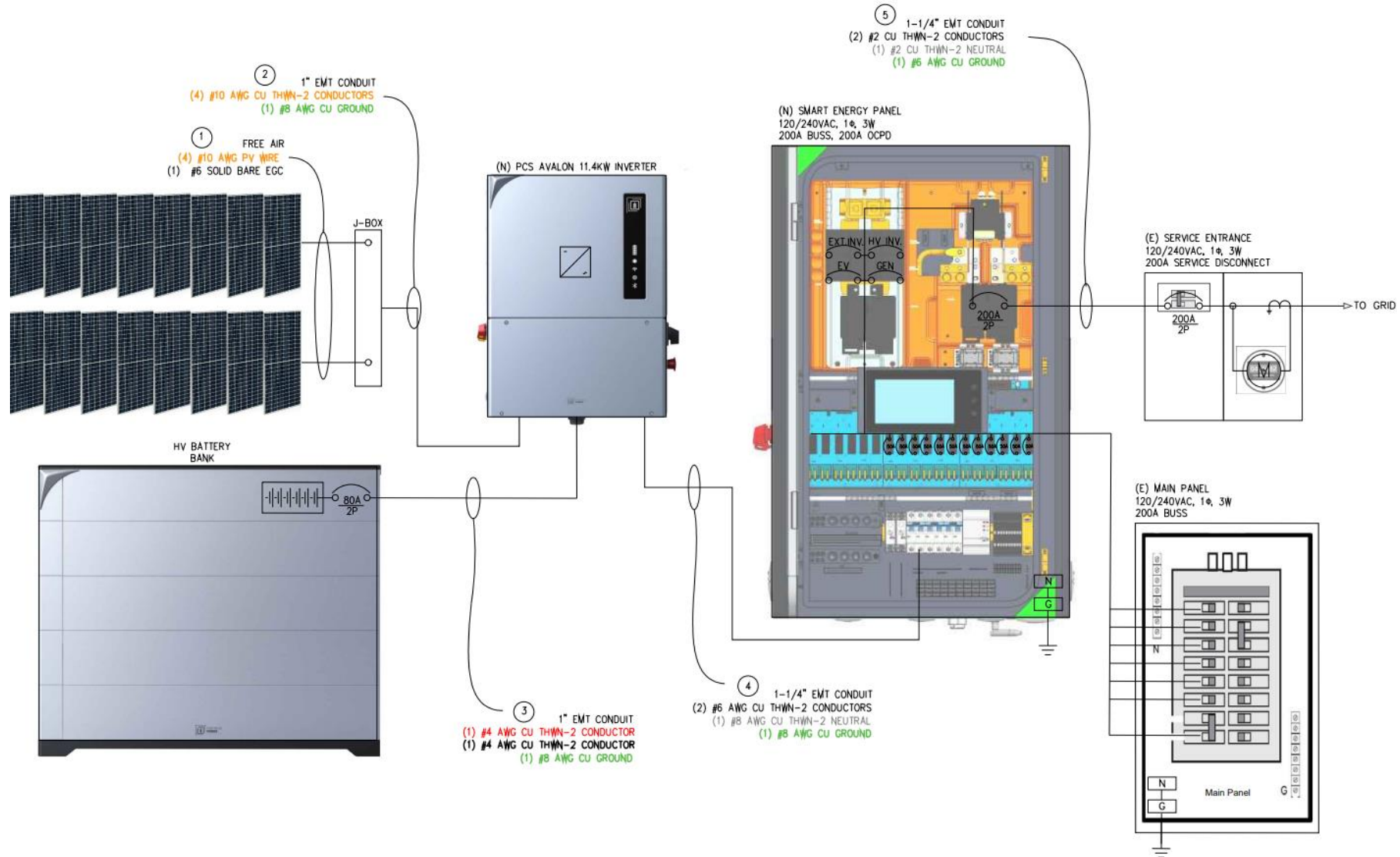
Such that:

$$g < 240 - k \times n$$

Where  $g$  is the grid breaker rating,  $k$  is the maximum AC current output of the inverter used, and  $n$  is the total quantity of the inverters used



# Fortress Power Avalon Line Diagram



## 3 Key Points about Avalon

The Smart Energy Panel is essentially an all-in-one AC combiner, eliminating the need for additional equipment. This fact makes the installation:

Easier !

Quicker !

Significantly cheaper !

# Avalon vs The Competition

	Fortress Power	Powerwall 3	Enphase	SolarEdge	Franklin	LG Home 8
<b>Battery chemistry</b> LFP is safer & lasts longer	LFP	LFP	LFP	LFP	LFP	NMC
<b>AC Coupling</b> Retrofitting	✓	✗	✓	✗	✓	✓
<b>DC Coupling</b> Increase round-trip efficiency	✓	✓	✗	✓	✗	✗
<b>Roundtrip efficiency (PV-&gt;Battery-&gt;Grid)</b> Less PV panel needed	<b>95%</b>	<b>90%</b>	<b>89%</b>	<b>94.5%</b>	<b>85%</b>	<b>90%</b>
<b>Single inverter Back-up Capacity</b> during nights and cloudy days	7.6/11.4 kW	11.5 kW	3.84 kW	10 kW	5 kW	7.5 kW
<b>Single unit battery capacity</b>	14.7-29.4 kWh	13.5 kWh	5 kWh	9.8 kWh	13 kWh	14.4 kWh
<b>Stackable &amp; modular</b>	✓	✗	✗	✓	✗	✗
<b>Built-in fire suppression</b>	✓	✗	✗	✗	✗	✗
<b>Level 2 EV Charger integration</b>	✓	✗	✓	✓	✓	✗
<b>Generator integration</b>	✓	✗	✓	✗	✓	✗
<b>Smart Load control for True Whole-home Backup</b>	✓	✗	✗	✗	✗	✗
<b>Resistant to grid voltage fluctuation</b> (poor grid power)	✓	✗	✗	✗	✗	✗
<b>Grid Service/VPP</b> Receive utility battery rebate	✓	✓	✗	✗	✗	✗



# Selling Avalon in CA: EnergyBroker

- Reduced BOM: Time and \$\$\$ in your pocket
- Aggressive Homeowner Payback>>
- Higher Attachment Rates  
(13% versus 85%)

	Avalon 7.6	Avalon 11.4	Franklin	Tesla
<b>Total Install Cost</b> <i>(incl. Equipment, PV, etc.)</i>	\$34,688	\$37,563	\$36,263	\$34,175
<b>Year 1 Bill Savings</b> <i>(Avoided Utility Costs)</i>	\$5,025	\$5,882	\$4,806	\$4,830
<b>NEM 3.0 optimization saving</b> <i>(Off Set TOU)</i>	\$1,000	\$1,200	\$600	\$600
<b>Year 1 Total Bill Savings</b>	\$6,025	\$7,082	\$5,406	\$5,430
<b>10 Year Bill Savings</b> <i>(incl. 4% escalator)</i>	\$73,950	\$86,924	\$66,353	\$66,685
<b>Payback in Years</b>	3.8	3.5	4.4	4.1

# Sales Training: Avalon

## Getting Started:

### 1. Complete Avalon Certified Training

[-https://training.fortresspower.com/course/avalon-authorized-installer-training](https://training.fortresspower.com/course/avalon-authorized-installer-training)

### 2. Determine Homeowner Priorities and Objectives

-Application, Goals, "Pain", Their Why!

### 3. Utilize Sizing Tool and Resources for System Design Package

[Fortress Power \(opensolar.com\)](https://www.opensolar.com)

### 4. Customer Meeting

-Discuss Key Benefits of Payback, Resiliency, Quality, and Service (Both Fortress and your Company!)

-Review Contract; remember people are emotional buyers. Showing and demonstrating our key benefits helps them feel they are solving their own problem.

### 5. Sign Contract and Deliver Excellent Customer Installation Experience

# Promotion Reminder!



From now until 6/30 you are eligible for one FREE Avalon 4.9kWh battery when you purchase an Avalon system through Greentech Renewables!

\*offer valid for one order while supplies last. Order must be submitted by 3/30 to qualify



# FORTRESS **POWER**

Secure your energy

[www.fortresspower.com](http://www.fortresspower.com)