

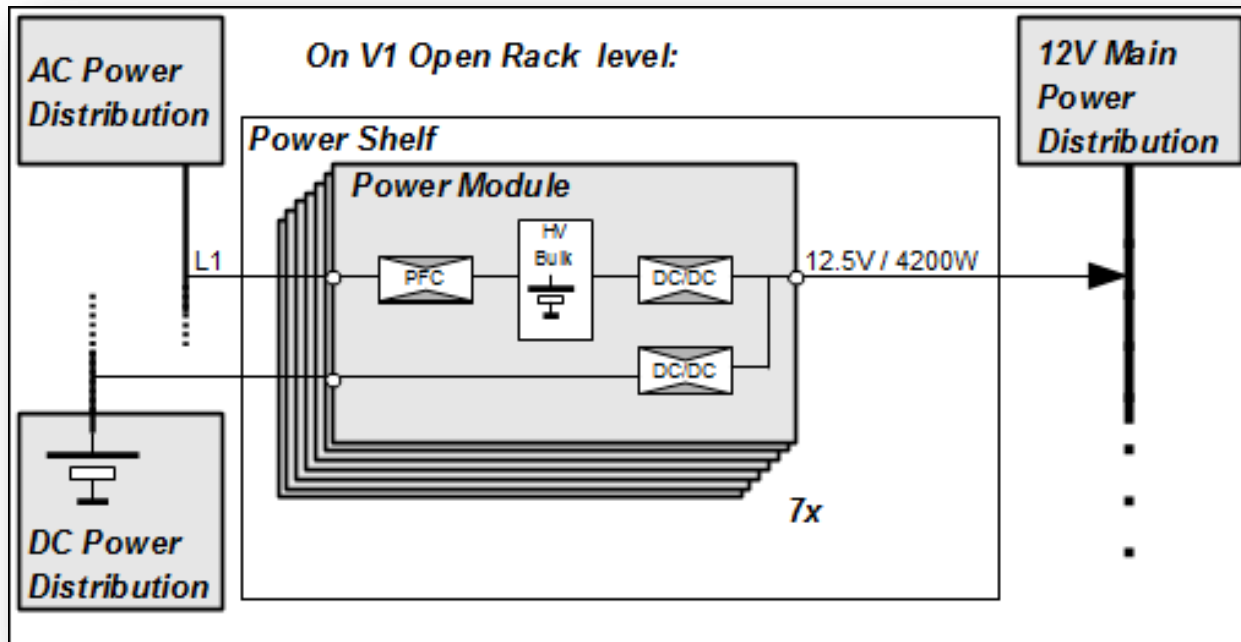
Power-One Open Rack V1 and V2 Power Solutions



OPEN
Compute Project

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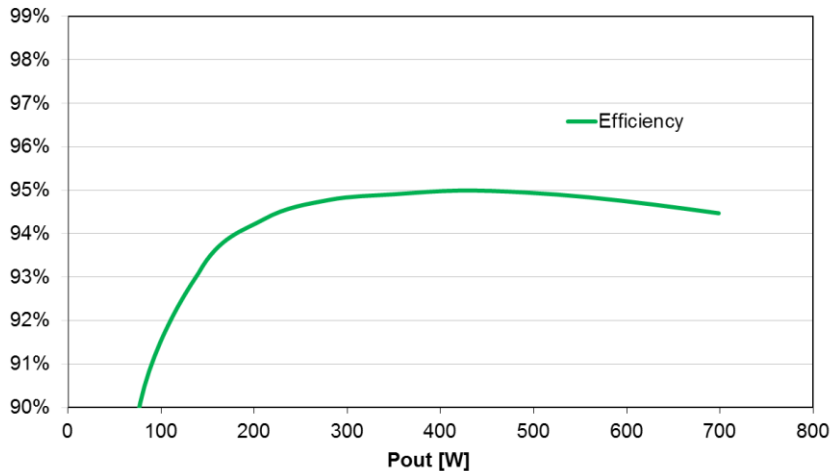
Open Compute V1



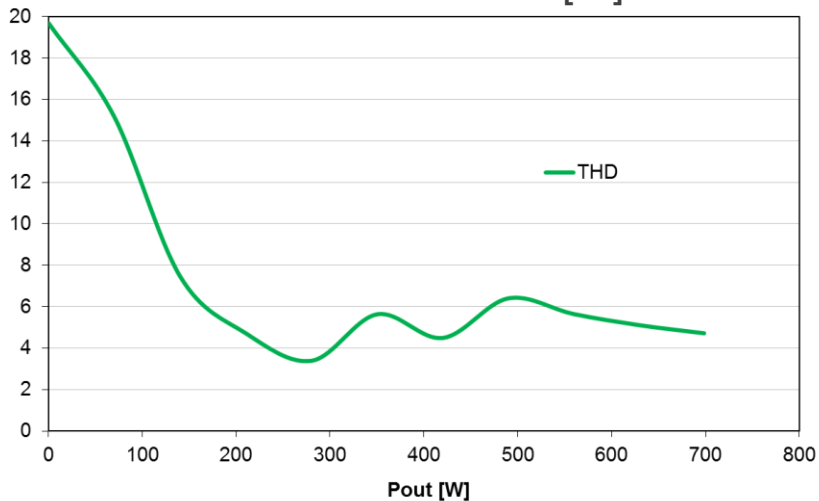
- 700W/12.6V power module with 277VAC compatible input
- 6+1 redundant 4200W power shelf
- Hot swap capability with Oring devices
- Droop share
- 90sec DC battery backup (battery external)

Open Compute V1 (cont'd)

Efficiency at 230VAC



THD at 230VAC [%]



- Shelf Dimensions:
533.5 x 140.2 x 399 mm
- Module Dimensions:
65.5 x 119 x 290.7 mm
- Peak Efficiency: 95.1%

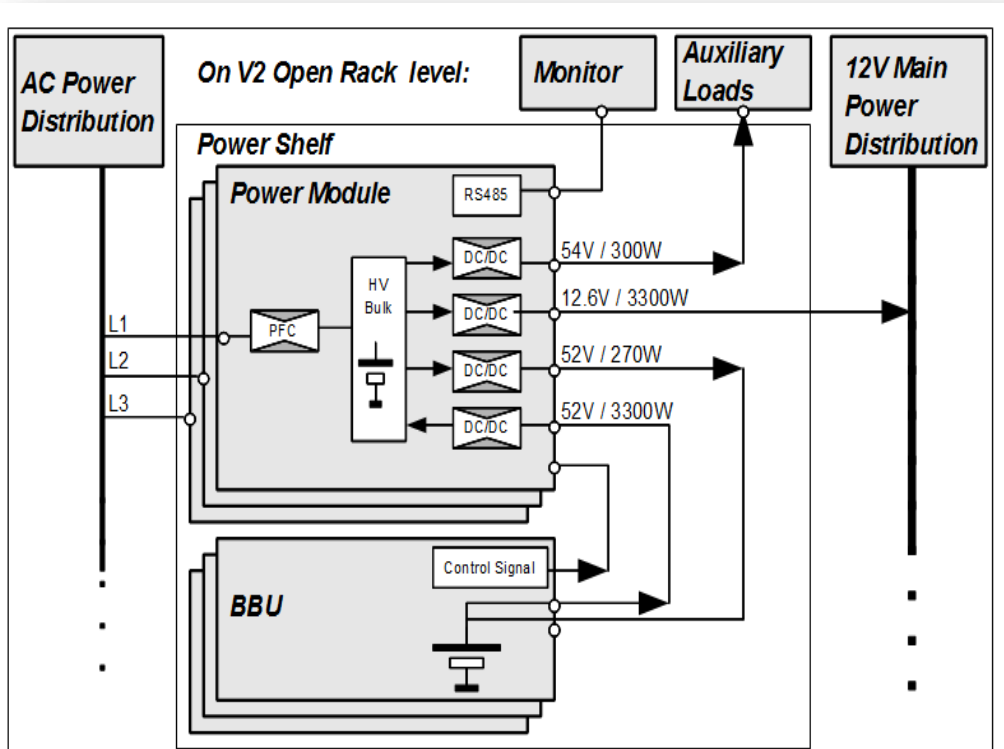
V2 Power Shelf

Power Module

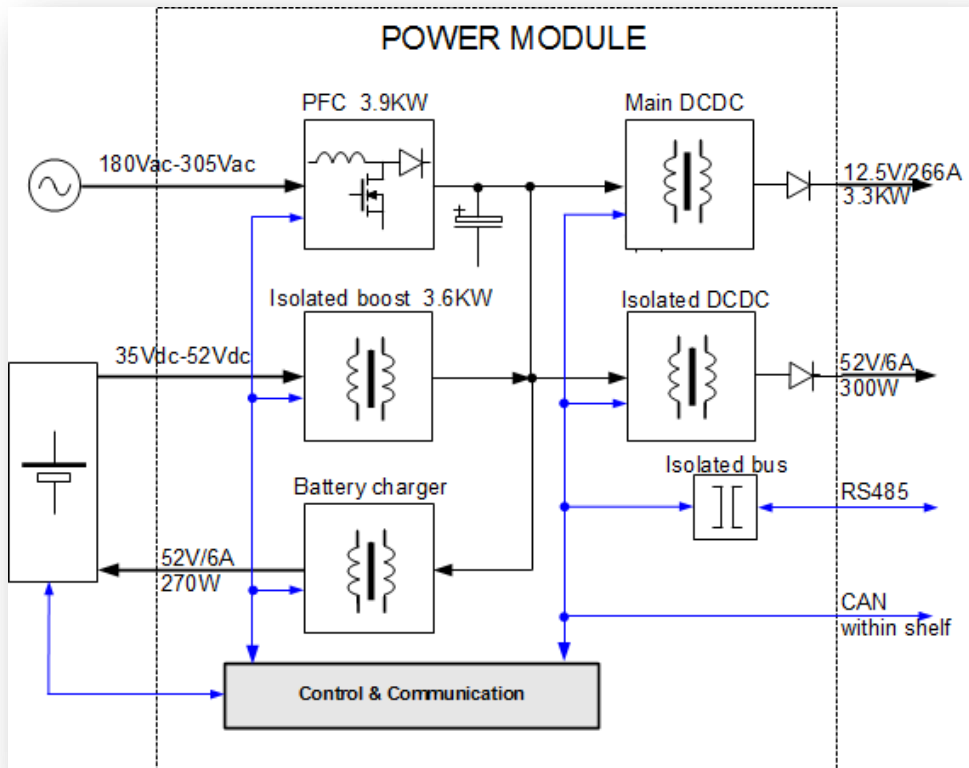
- 3300W/12.5V main output
- 52V/5A battery charger 54V/5.5A auxiliary output
- 3600W/120A battery discharger
- Hot plug capability
- Active current share
- RS485 (CAN internal to shelf)

Shelf

- Three-phase input
- 2+1 redundancy + batteries
- 90sec battery backup
- RS485 (CAN internal)
- Single 12V busbar output
- 54V auxiliary output
- Synchronized start-up

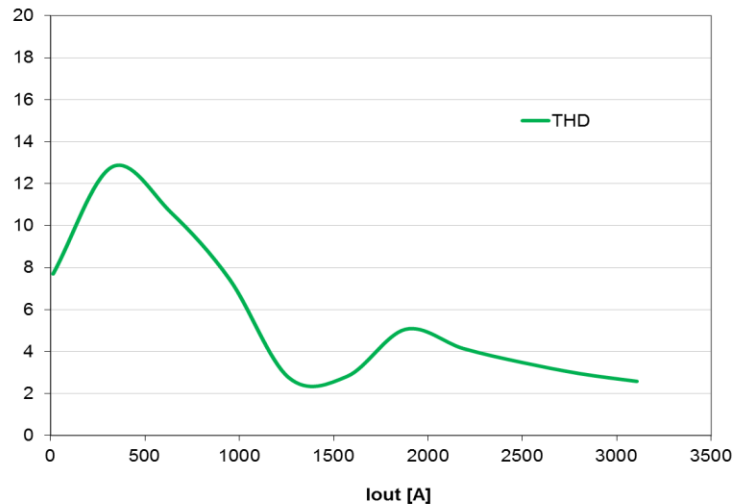
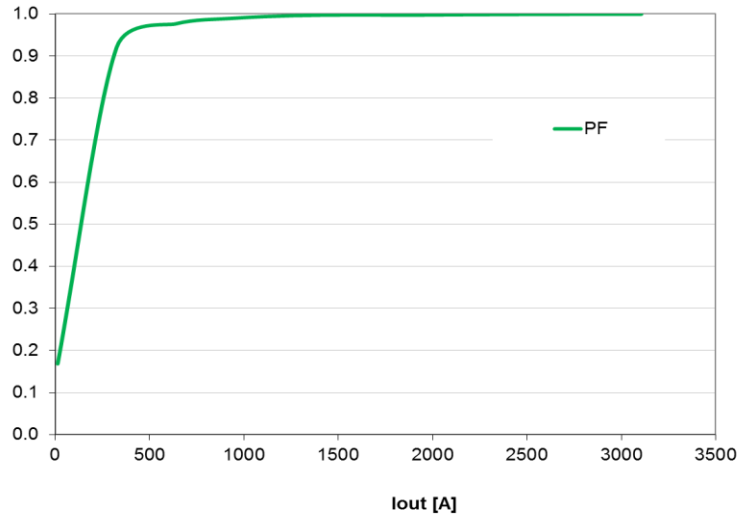


V2 Power Module – Overview



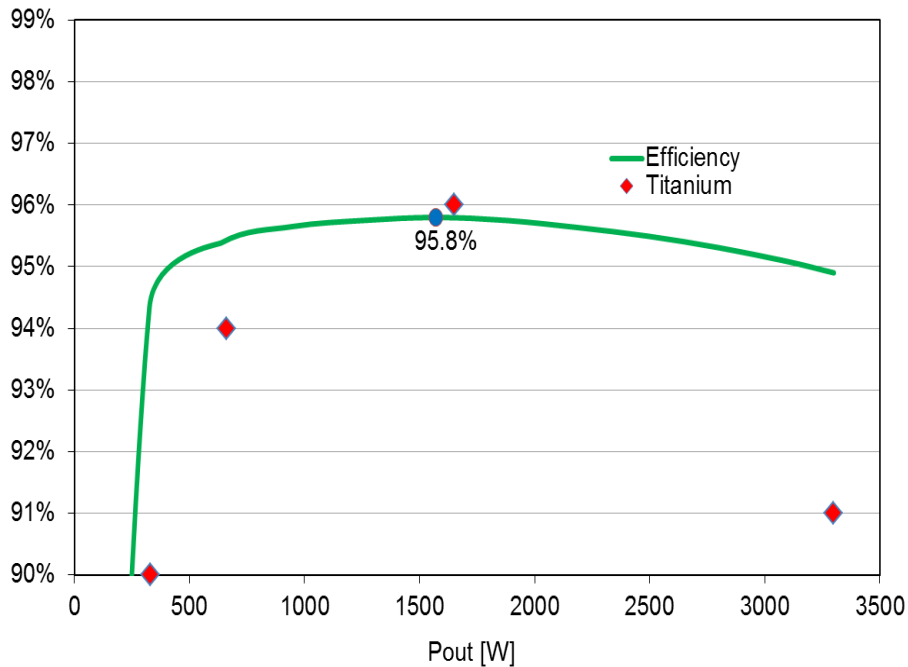
- 3.9kW multi-phase PFC stage
- 3.3 kW multi-phase DCDC
- 3.6kW Isolated boost stage
- 300W isolated DCDC
- 270W Li-On battery charger
- Total output power 3870W
- Input power capability 7500W
- Full digital control
- RS485 external communication
- CAN (inter module com)
- Oring Mosfets
- 20ms hold-up time (full load)

V2 Power Module – AC Power Quality



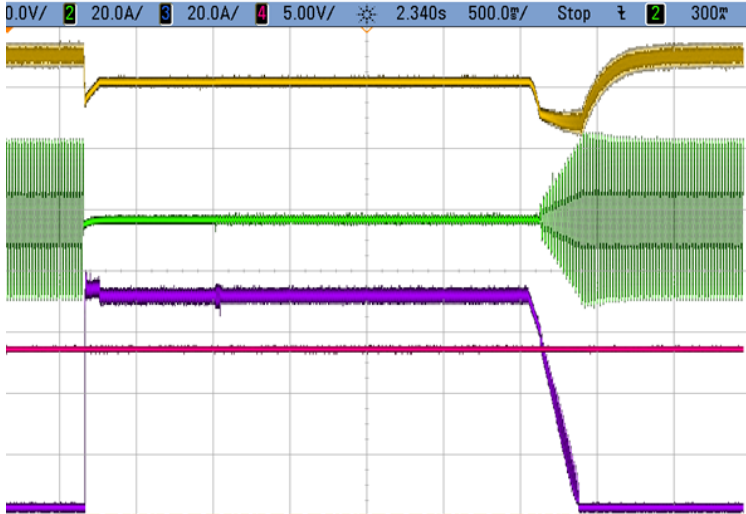
- Non linear digital control helps improving AC current THD and Power Factor (PF)
- PF > 0.99 for P_{out} > 1000W
- I_{THD} value close to 2%

V2 Power Module – Efficiency



- Peak efficiency exceeds by far Titanium levels at 10%, 20% and 100% load points
- Super flat efficiency curve: >95% across 15% to 95% of the load
 - Use of optimized topology
 - Optimized magnetics
 - State of the art semiconductors

V2 Power Module Back-Up Transition



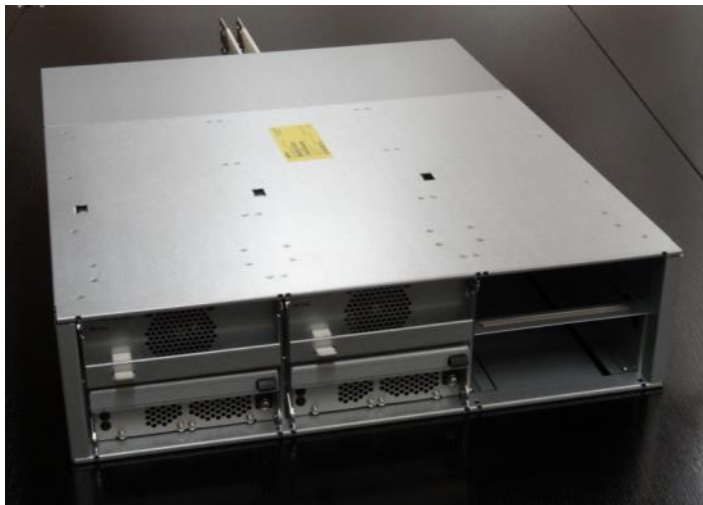
Ch1: Bulk Voltage
Ch2: AC Input Current
Ch3: Battery Current
Ch4: 12V Output

- Full load transition waveforms
- No start-up current overshoot in battery (actively limited)
- Bulk voltage remains above 415V
- Soft return to AC to limit AC surge currents
- Perfectly stable 12Vout: no dynamic deviations

V2 Solution

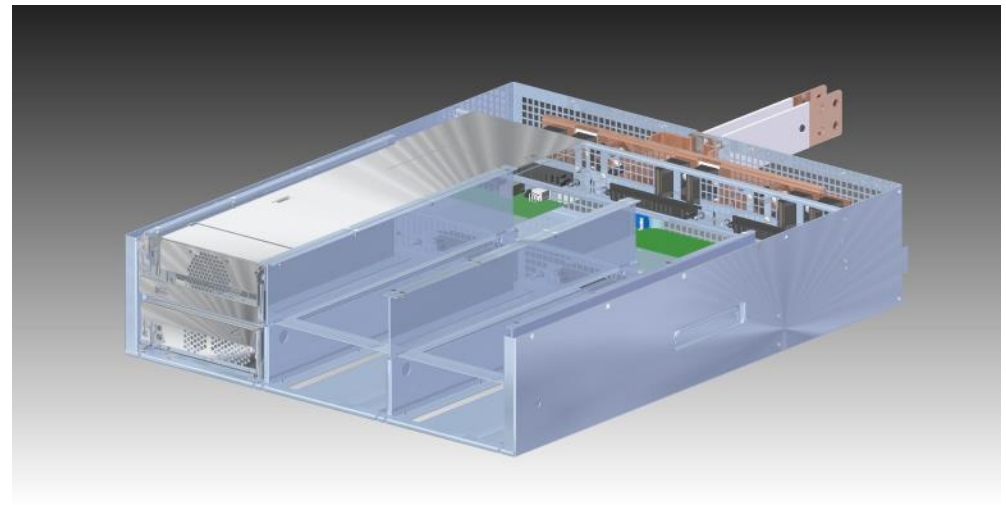
Shelf

- 534mm x 612mm x 139mm
- 21" x 24" x 5.5"
- Single bus bar system (535A)
- Power modules and batteries in the same shelf



Module

- 165mm x 552mm x 64 mm
- 6.5" x 21.7" x 2.5"
- 21W/in³ (including 3600W back-up converter)



Summary

- Power-One V2 shelf solutions provides a reliable total power solution for Open Rack including the Li-On batteries
- Excellent AC power quality; Very high overall efficiency; Extremely flat efficiency curve across the load range
- Autonomous back-up transitions without any output deviations
- Random AC restart time after back-up to limit inrush current on grid/genset
- Shelf provides rack auxiliary supply
- Robust RS485 uplink to rack monitoring unit

Thank You!



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