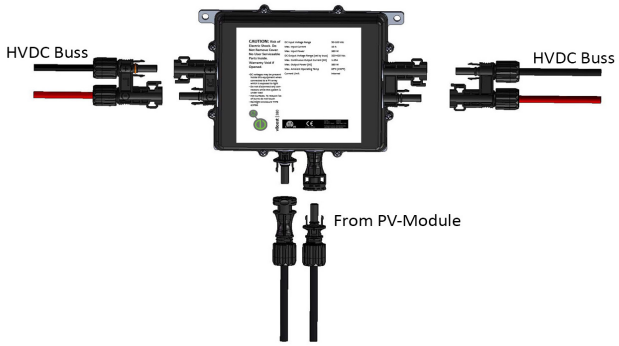
vBoost vB300x Series
vB300B - Add-on vBoost
vB300J - PV-Module Integrated

vB300J PV-Module Integrated



vB300B Rack Mounted, Add-on vBoost

Features

- Low voltage/high current to high voltage/low current
- Up to 380W Power Output
- Module Integrated includes vBoost to vBoost cabling
- Connectors keyed to prevent cross connection
- Up to 10,000W per branch (10 AWG wire)
- Power Line Comm for data monitoring and output control
- Power Throttling for off-grid/storage applications
- MC compatible Connectors
- Output disabled until commissioned (Optional)

Benefits

- Each PV-module is an independent power generator
- Selectable Power Capacities (300W, 380W)
- PV-module Technology Agnostic
- Fast, Accurate MPPT at each PV-module
- Overvoltage, overcurrent and short current protection
- Overtemperature protection
- Remote Shutdown
- Power Electronics module detachable for on-site replacement
- Constraint-free installation design

The VB300x is a DC DC boost converter that upconverts the voltage from the PV module and outputs voltage in the range of 320-400Vdc, while reducing the current by a similar factor. The VB300x, by not internally regulating the output voltage, allows it to be connected to a High Voltage DC (HVDC) buss where the load sets the buss voltage. In this sense, the VB300x behaves as a current source and each VB300x, with its connected PV-module, become independent power generators that efficiently transfer that power to the HVDC buss.

Multiple VB300xs, up to the ampacity of the buss, can be connected in a branch and multiple branches can connected in parallel using inline fuses and wiring thereby eliminating, or reducing the number of combiner boxes typical of a string connected array. On the PV-module side, VB300x performs impedance matching Maximum Power Point Tracking (MPPT) for maximum energy harvesting per PV-module regardless of its neighbor's performance or operation.

By converting PV-modules to independent power generators, traditional restrictions on PV array design such as power/voltage matching, orientation matching, string size matching are eliminated. This greatly facilitates the design and implementation and presents the opportunity to utilize all available space, regardless of the site layout. PV-modules of differing sizes can be interconnected and islands of power, such as areas of roof that are unusable for string layout, are now easily utilized for maximum solar power extraction. This architecture also enables replacement of PV-modules with different modules, thereby future proofing the installation against module changes or original module unavailability.

VB300x has optional power line communications (PLC) for bidirectional information flow between the device and central communications. VB300x can report energy, voltage, current, temperature and error flags and can process power throttling, remote shutdown and voltage limit setting commands. PLC is not necessary for autonomous operation or where data collection is not required. The central communications function ingests data from each VB300x and through an API presents the data to the site's data monitoring facility for site level reporting.

VB300x is available either as an independent device that can be connected to any PV-module (vB300B), including retrofits, or as a PV-module integrated device where it replaces the traditional junction box (vB300J). For higher buss voltages, branches can be serially connected to effectively double the HVDC buss voltage.

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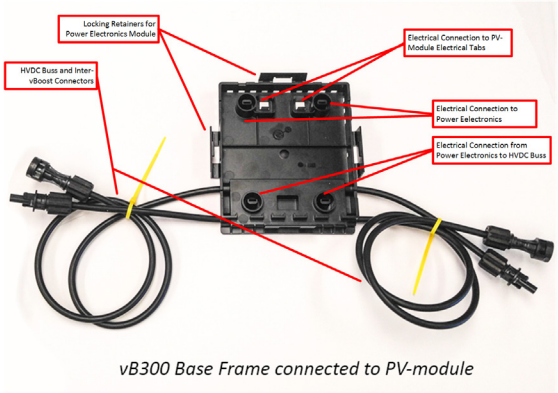
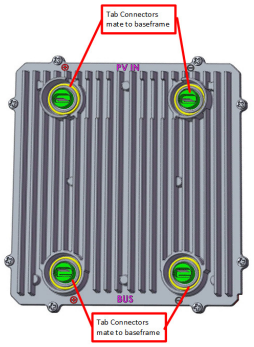
Technical Specifications	vB300x	vB380x
Input (Operational)		
Maximum Input Power	300W	380W
Maximum Input Voltage	42Vdc	90Vdc
Maximum Input Current	10A	10A
Output		
Maximum Output Power	300W	380W
Maximum Output Voltage	420Vdc	420Vdc
Maximum Operational Output Voltage	410Vdc	410Vdc
Maximum Output Current	0.95A	1.125A
Operating Temperature Range	-40°C to 65°C	-40°C to 65°C
Maximum Branch Power	~10,000W @ 400Vdc	~10,000W @ 400Vdc
Compliance	UL1741/IEEE1547/CSA 107.1	
Protection	Over voltage, Over current, Over temperature, Short Circuit	
Power Throttling	Yes, 0 - 100%	Yes, 0 - 100%
Field/On-site unit replacement	Yes, from base frame	Yes, from rack mount



vB300 Base Frame connected to PV-module

Completed Baseframe and Power Electronics Module



Underside of Power Electronics Module

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