Hipo Modules, DC boost version	**HIPO xxxDTx**	Patents: US12088213B2, CA3159480A1

In an Ultrafast Level 3+ EVSE application, the HIPO™ modules are used to convert electrical power between the power source and the vehicle. This document provides a detailed description of our DC/DC current controlled, boost converter module. Refer to the HIPO xxxDTx version for the AC/DC optimized version.

The module integrates numerous protections such as voltage, current, temperature limits, fuses, and inlet contactors. Galvanic isolation is not provided in these modules. It is obtained from overall system design. A ground leak detection function is provided by the optional cable interface board.

Various components can be added to complete the EVSE. A typical system comprises a battery bank, one or more HIPO modules with 2 DC inductors each, one cable interface board per active EV charging port, various DC contactors, ground leak detection, control power supply and support components, as well as a main controller.
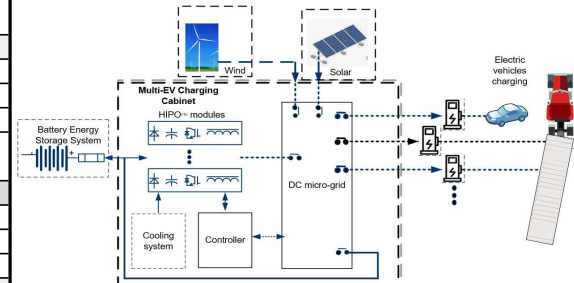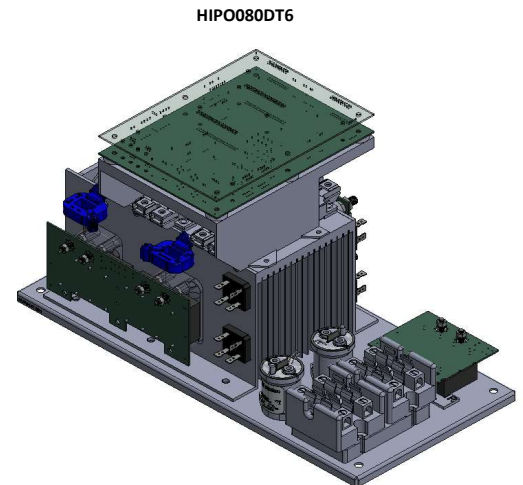
This DC/DC module is the heart of a battery backed Level 3+ EVSE, with or without solar array. It can be used to add **V2X** functionality to your system. It features very low arc flash energy levels.

For more information and engineering details, please contact us at: **Info@hipowersolutions.ca**

Level 3+ ultrafast EV charger example using 3 x HIPO400AT6

	HIPO400DT6 DC Boost converter Up to 400ADC in at up to 650VDC out Typically used in 120kW to MW EVSE	**HIPO80DT6** DC Boost converter Up to 80ADC in at up to 650VDC out Typically used in 25kW to 250kW EVSE
Features		
Sustained Power output at 25C ambiant	120kW per module at up to 650VDC	25kW per module at up to 650VDC
Topology	Interleaved boost converters (VDC out > VDC in)	
DC inductors	2 per module for reduced current ripple	
DC/DC mode (per module)		
Module DC input voltage	60V to 400VDC nominal	
DC output current	400A at 0% boost, 200A at 100% boost	80A at 0% boost, 40A at = 100% boost
Galvanic isolation	Control signals are galvanically isolated from the power circuits	
Protections	Fuses and inlet contactors included as well as electronic over current, over voltage, and temperature limits.	
DC bus precharge	Automatic precharge from AC inlet when run command asserted.	
DC bus stored energy	~80 Joules in capacitors, ~20 Joules in inductors	~20 Joules in capacitors, ~5 Joules in inductors
Control power	24VDC at 1.5A, 1.8A inrush	24VDC at 1.3A, 1.8A inrush
Control modes		
Interface	An external cable interface board provides monitoring and analog / digital signals to the main controller	
Control loops	Each module has independent current control loops following the main controller setpoint.	
Environment		
Cooling (internal)	Liquid cooling (approved anti-freeze and anti-corrosion needed)	Air cooling (proper filtering needed)
Enclosure rating	NEMA 1 (Not finger safe)	Open chassis
Ambient temperature	-30C to 35C (Wider range available)	-30C to 35C (Wider range available)
Humidity	0-95% non-condensing	0-95% non-condensing
Storage temperature (liquid drained)	-40C to 50C (when cooling circuit drained)	-40C to 50C
Arrangement		
Modules Dimensions	Module = 260w x 520h x 260d, 20kg	Module = 200w x 420h x 260d, 15kg
Mounting	Side by side vertical mounting in cabinet. DC input from the bottom, DC output at the top.	Side by side vertical mounting in cabinet. DC input from the bottom, DC output at the side.
Standards followed		
Safety	CSA C22.2, UL v0	

HIPO080DT6

Typical Accessories		
Cable Interface board	Typically, one per EV cable	
Control cable	One per module, 0.5m to 2m	
Control signals	24V digital IOs, 0-10V analog	
DC inductors (2 per module)		
Current rating	200A	40A
Dimensions	130w x 160h x 160d, 15kg	100w x 100h x 120d, 10kg
DC contactors (2 per EV cable)		
Current rating	500A @ 900VDC	100A @ 800VDC

Typical application
V2X option available with expanded DC micro-grid