VP6000

Bi-directional AC/DC Power Supply

EA-0447

VP ELECTRONIQUE

Highlight

- SiC based, 94% high efficiency
- Wide range input
- 6000W DC side rated power
- 8”x11.9”x1.67” compact size
- Compatible with 3-phase and single phase input
- -30℃-70℃ operation temperature range
- Output voltage and constant current programmable
- Intelligent fan speed control
- LED indication of power OK
- DC_OK analog indication signal
- Remote sense, Remote ON/OFF control
- Auto and Manual Charge/Discharge control
- Active current sharing
- 12V/0.5A standby power
- Support semi-custom design
- Optional CAN Bus or RS485 communication
- Optional optimized for motor load version
- Optional version support off-grid operation mode

Typical Application

- Automation
- Battery Cell formation & grading
- Battery charging/discharge module
- Energy storage system

Note:

1. *For any custom design and model name, please consult*
2. *Additional off-grid operation version available,*

Key Specification

Model	VP6000T24	VP6000T30	VP6000T36	VP6000T48	VP6000T60
DC Voltage	24V	30V	36V	48V	60V
DC Current	0-250A	0-200A	0-166.7A	0-125A	0-100A
Model	VP6000T72	VP6000T85	VP6000T100	VP6000T120	VP6000T150
DC Voltage	72V	85V	100V	120V	150V
DC Current	0-83.3A	0-70.6A	0-60A	0-50A	0-40A
Model	VP6000T250	VP6000T330	VP6000T400	VP6000T650	VP6000T800
DC Voltage	250V	330V	400V	650V	800V
DC Current	0-24A	0-18.2A	0-15A	0-9.2A	0-7.5A
DC Rated Power	6000W, derating to 3000W when single Phase @230Vac				
Dimension	8”x11.9”x1.67” or 204mm x 302.5mm x 42.5mm				
EMC	Class A Emissions				

All parameters are set at 25℃ ambient unless other specified Version 05, Dec, 2025

Ordering Model Name

VP	6000	T	24	□□
Series Name	**Rated Power**	**Connector Type**	**Output Voltage**	**Control Code**
	6000W	T: Screw terminal		AA: Default for Standard model

AC – DC Direction

Function	Minimum	Typical	Maximum	Condition
Rated AC Input Voltage	200VAC		480VAC	3Phase Line to line voltage without Neutral. Output Power derating to 65% rated load at 180VAC three phase input. See Fig.1 for detail
AC Input Voltage Range	180VAC		528VAC	
AC Input Frequency	47Hz	50 / 60Hz	63Hz	
AC Input Current			16A	Per phase
Power Factor	0.99			With max rated output power
THDi			5%	@rated load, 380VAC Input, tested with AC Source
Efficiency			94%	24V Model, @rated load, 380VAC Input
			94.5%	48V Model, @rated load, 380VAC Input
			95.5%	650V Model, @rated load, 380VAC Input
AC Inrush Current			32A	@480Vac Input
DC Voltage Trimming Range	22V	24V	26V	24V Model
	27V	30V	33V	30V Model
	33V	36V	40V	36V Model
	44V	48V	53V	48V Model
	54V	60V	66V	60V Model
	64V	72V	80V	72V Model
	77V	77V	94V	85V Model
	90V	100V	110V	100V Model
	100V	120V	120V	120V Model
	135V	150V	165V	150V Model
	225V	250V	275V	250V Model
	297V	330V	363V	330V Model
	360V	400V	430V	400V Model
	600V	650V	700V	650V Model
	750V	800V	850V	800V Model
Rated DC Power			6000W	See Fig.1 for derating curve
Total Regulation			1%	Including line regulation and load regulation, measured at output terminal
Output Ripple & Noise			1%	Peak-Peak value, measure at 5cm from PSU with 0.1uF Ceramic and 100uF electrolytic capacitor, 20MHz BW
Dynamic Response			5%	with 50% load step, min from 5% load
Power Up Time			3s	
DC Rise Time			50ms	
DC Holdup Time	10ms			@380VAC/50Hz, 4kW Load

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DC – AC Direction

Function	Minimum	Typical	Maximum	Condition
DC Input Voltage Range	22V	24V	26V	24V Model
	27V	30V	33V	30V Model
	33V	36V	40V	36V Model
	44V	48V	53V	48V Model
	54V	60V	66V	60V Model
	64V	72V	80V	72V Model
	77V	77V	94V	85V Model
	90V	100V	110V	100V Model
	100V	120V	120V	120V Model
	135V	150V	165V	150V Model
	225V	250V	275V	250V Model
	297V	330V	363V	330V Model
	360V	400V	430V	400V Model
	600V	650V	700V	650V Model
	750V	800V	850V	800V Model
DC Side Input Power			6000W	See Fig.1 for derating curve
AC Output Voltage Range (Follow line voltage)	180VAC		528VAC	3Phase Line to line voltage without Neutral. Output Power derating to 65% rated load at 180VAC three phase input. See Fig.1 for detail
AC Output Frequency (Follow line frequency)	47Hz	50 / 60Hz	63Hz	
AC Output Current			14A	Per phase
THDi			5%	

Standby Output Specification

Function	Minimum	Typical	Maximum	Condition
Output voltage	11.4V	12V	12.6V	
Output Current	0A		0.5A	
Over current protection (OCP)	1A			Auto-restart after fault is removed
Short circuit protection (SCP)				Auto-restart after fault is removed

Protection Specification

Function	Minimum	Typical	Maximum	Condition
DC side Over Current Protection			105% Rated DC Current	CC control, Auto-restart
AC Side Over Current Protection			105% Rated DC Current	CC control, Auto-restart
Short Circuit Protection				Auto-restart
DC side Over Voltage Protection				Latch off *
OTP				Auto-restart
Islanding Protection – DC-AC Direction				Auto-restart, Non off-grid version

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Reliability

Function	Minimum	Typical	Maximum	Condition
MTBF	500Khrs			According to Telecordia SR-332. 480Vac 25℃ ambient with rated load
Life	5 years			Rated condition

EMC

Conducted Emissions	EN 55032,Class A
Radiated Emissions	EN 55032,Class A
Note: VP6000 is a enclosed type PSU as a component intended to be assembled and built inside the system cabinet, PSU normally is to mounted connecting to an earthed metal plate, all the EMC tests are performed with the PSU and resistive loads plated on a metal plate to simulate the system application. The final system must re-evaluate to confirm it can still meet the EMC directives.	
Harmonic Current Emissions	IEC 61000-3-2 Meet Class A limit
Voltage Flicker	IEC 61000-3-3
Electrostatic Discharge	IEC 61000-4-2 Level 4 (Air Discharge: 15 kV, Contact Discharge: 8 kV) Criteria A
Radiated Field	IEC 61000-4-3 Criteria A
Electrical Fast Transient / Burst	IEC 61000-4-4 Level 2 (1 kV),Criteria A
Surge	IEC 61000-4-5 Level 3 (Common Mode 2kV, Differential Mode 1kV), Criteria A
CS	IEC 61000-4-6 Level 2 (150 kHz-80 MHz, 3 Vrms, 6 Vrms at ISM bands and Amateur radio bands), Criteria A
Power Frequency Magnetic Fields	IEC 61000-4-8 Criteria A, Magnetic field strength 30A/m
Voltage Dips	IEC 61000-4-11 Criteria A: @3000W or lower 0%UT, 0.5Cycle (10 ms) (0°,45°,90°,135°,180°,225°,270°,315°,360°) Criteria B 0% UT,1 cycle (20 ms), 0° Criteria B 70% UT,25 cycle (500 ms) , 0° Criteria B 0% UT,250 cycle (5000 ms) , 0°
Voltage Dips	IEC 61000-4-11 30% 10 ms Criteria A @3000W or lower 60% 100 ms Criteria B 100% 5000 ms Criteria B

Criteria A: Normal operation within spec limit
Criteria B: Out of regulation or restart to normal operation after test

Safety / Directives

PECS *		IEC 62477-1
ITE Safety *		IEC 62368-1 UL 62368-1+CAN/CSA No. 62368-1 GB 4943.1-2022, GB/T 9254.1-2021, GB/T 9254.2-2021,GB 17625.1-2022
CE *		EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU
UKCA *		In conformance with Electrical Equipment (Safety) Regulations 2016, and Electromagnetic Compatibility
Dielectric Voltage	Input to/Output	3000VAC
	Input to/Ground	1800VAC
	Output to/Ground	500VAC for 48V and below models 1500VAC for 60V and above models

*

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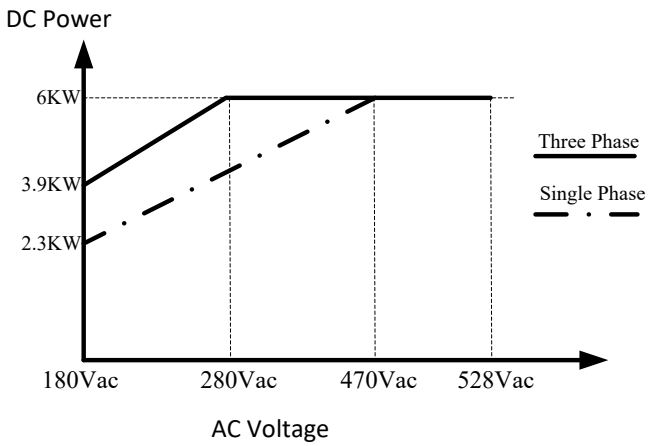
Environmental

Function	Minimum	Typical	Maximum	Remark
Operation Ambient Temperature	-30℃		70℃	See derating curve
Storage Temperature	-40℃		85℃	
Operation Altitude	0		5000m	
Operation and Storage Humidity	5%RH		95%RH	Non-condensing
Acoustic Noise			50dB	80% Load, 1m distance
Shock			196m/s2	Base plate mounting
Vibration			19.6m/s2	10-500Hz 1 Hour for each axis; base plate mounting

Leakage Current

Function	Min	Typical	Max	Condition
Input-PE Leakage			2mA	480Vac/60Hz Normal Condition
			4mA	480Vac/60Hz Single Fault Condition
Output-PE Leakage			100uA	480Vac/60Hz Normal Condition
			500uA	480Vac/60Hz Single Fault Condition

Power De-rating Curve



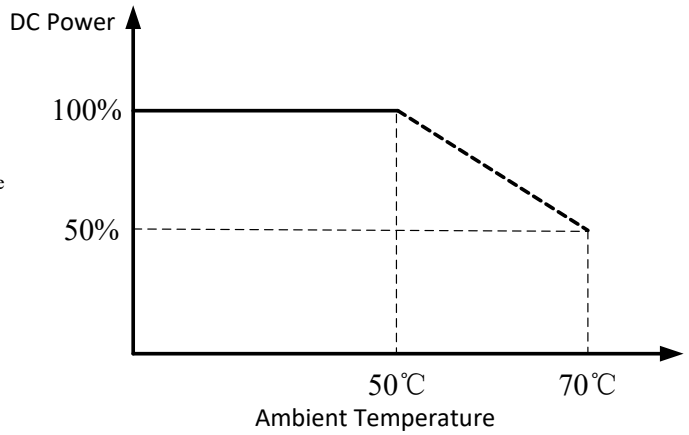


Fig.1

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Mechanical Drawing

For models with 120V output or below

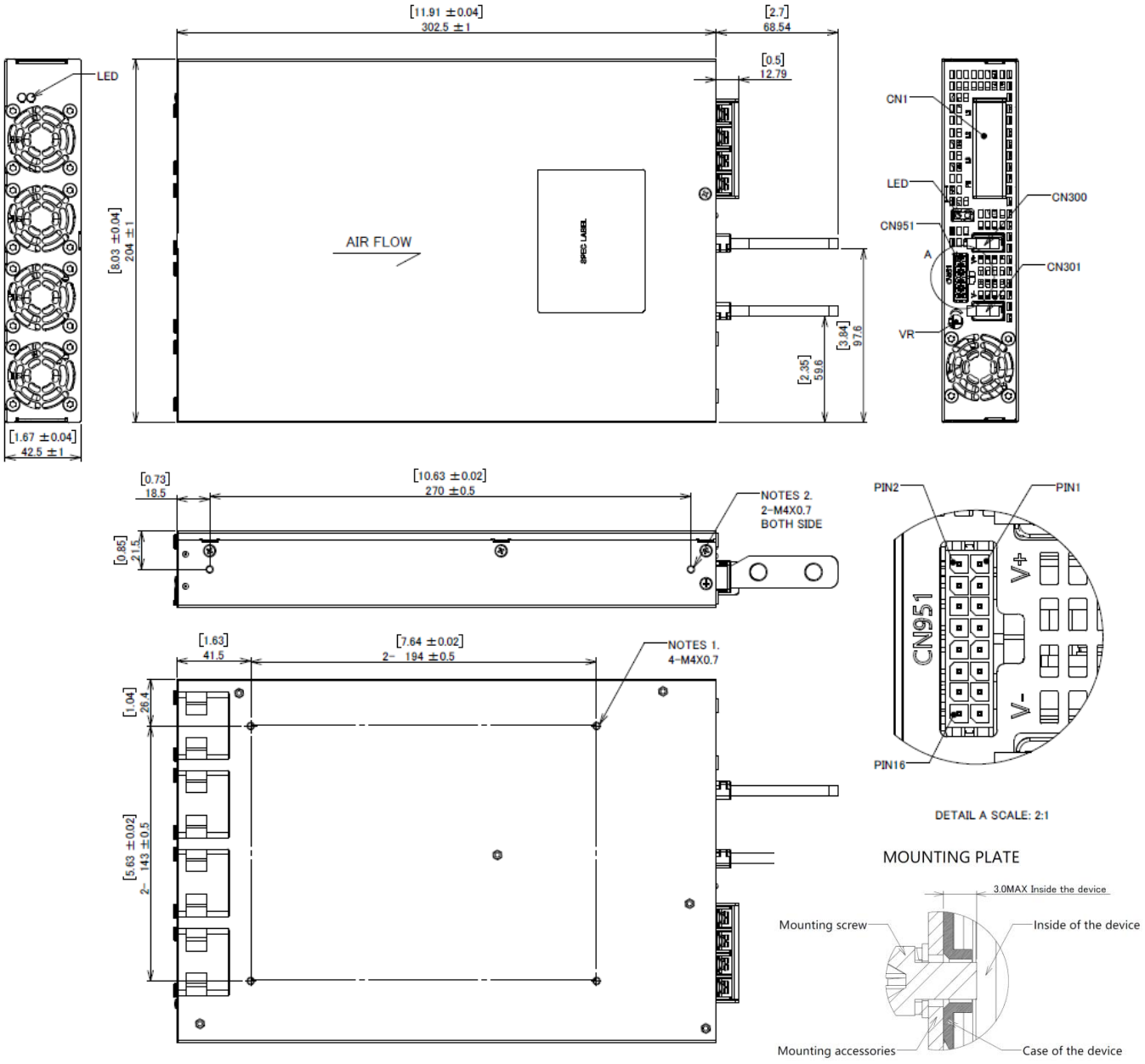

Fig.2

Notes:
1. Base plate mounting, M4 thread holes, maximum penetration 3.0 mm (0.12 inch) from outside face of chassis
2. Side mounting, M4 thread holes, maximum penetration 3.0 mm (0.12 inch) from outside face of chassis
3. CN1 is AC input/output terminal block and with M4 screw in four positions,wire gauge is 8~20AWG
4. CN300/CN301 is DC output/input termianl block and suggest to use M8 screw and nut to fix wire
5. CN951 is signal and control conntector, type is MOLEX 430451600, mate with 430251600 or equivalent.
6. VR: clockwise is to increase the output voltage, anti-clockwise is to reduce the output voltage.

Mechanical Drawing

For models with 150V output or above

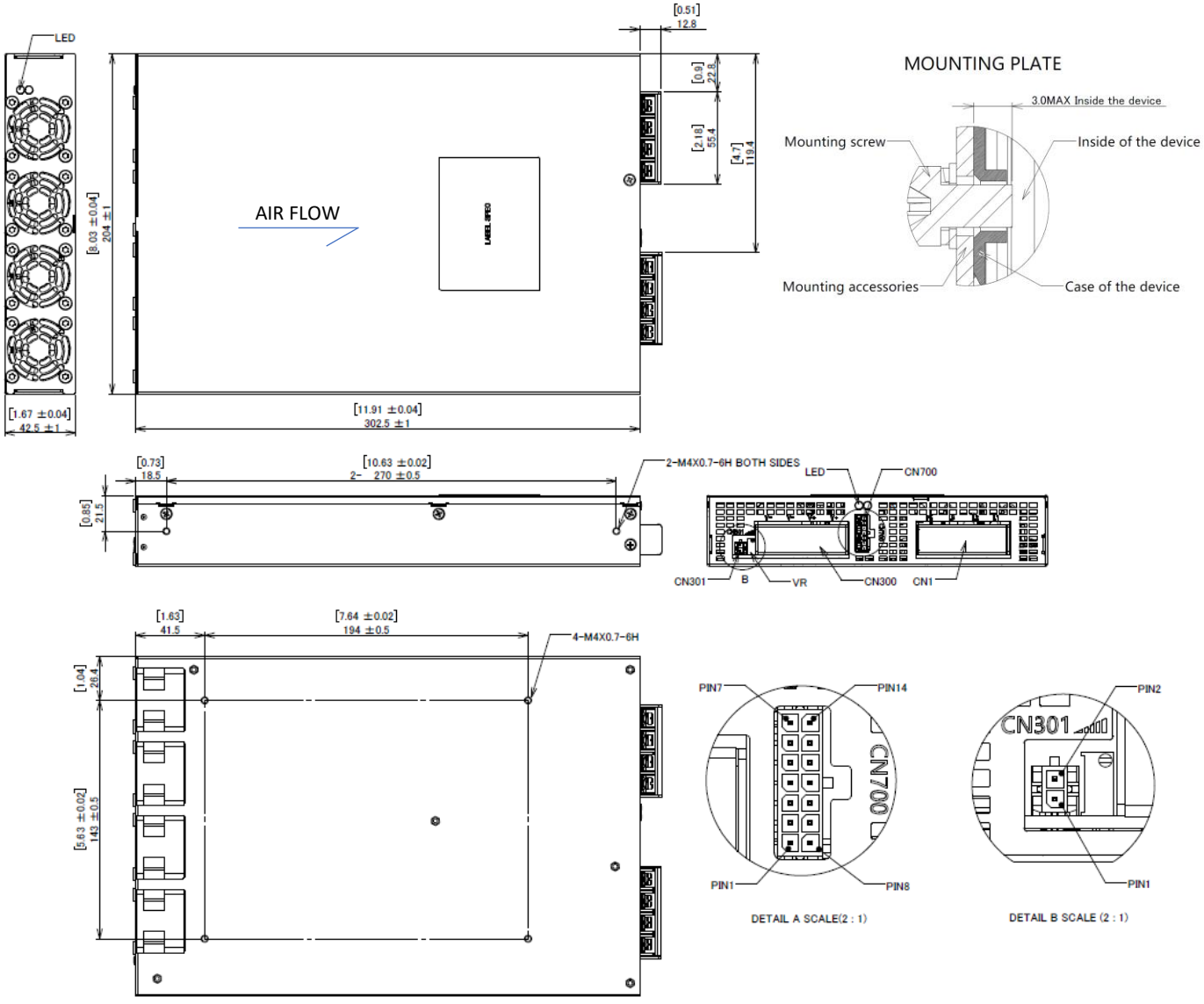

Fig.3

Notes:
1. Base plate mounting, M4 thread holes, maximum penetration 3.0 mm (0.12 inch) from outside face of chassis
2. Side mounting, M4 thread holes, maximum penetration 3.0 mm (0.12 inch) from outside face of chassis
3. CN1 is AC input/output terminal block and with M4 screw in four positions,wire gauge is 8~20AWG
4. CN300 is DC output/input terminal block and with M4 screw in four positions,wire gauge is 8~20AWG
5. CN700 is signal and control conntector, type is MOLEX 430451400, mate with 430251400 or equivalent.
6. VR: clockwise is to increase the output voltage, anti-clockwise is to reduce the output voltage.
7. CN301 is signal connector, type is MOLEX 430450200,mating with MOLEX 430250200 or equivalent.

Connector & Pin Assignment

Connector	Pin	Assignment	Function/Description
CN951 (For models with 120V output or below on Grid Version)	1	CANH	CAN-Bus high Communication pin.
	2	C/D	Conversion direction manually control signal. This pin is enabled when the Bi-C signal is low.
	3	Bi-C	Bi-directional Control signal.
	4	PS_ON	Remote ON/OFF control pin
	5	5VCAN	This is the CAN-Bus 5V voltage supply pin
	6	ALERT	Fault/Warning - An open collector signal is provided to indicate any fault or warning such as over temperature, overvoltage, over current, undervoltage, and fan fault.
	7	CANL	CAN-Bus low Communication pin.
	8	DC_OK	DC OK indicator
	9	COM	Common - This is the common return pin for the CN951 signal Pin1 to Pin10.
	10	12VSB	This is the 12V standby output voltage pin.
	13	Remote sense+	Remote Sense Positive
	14	Remote sense-	Remote Sense Return
	15,16	Current share	This pin must be connected of the power supplies when DC Output parallel connected.

Connector	Pin	Assignment	Function/Description
CN700 (For models with 150V output or above)	1, 8	12VSB	This is the 12V standby output voltage pin.
	2, 9	12V GND	This is the 12V GND pin. It is isolated from the main output.
	3	CANH	CAN-Bus high Communication pin.
	4	ALERT	Fault/Warning - An open collector signal is provided to indicate any fault or warning such as over temperature, overvoltage, over current, undervoltage, and fan fault.
	5	DC_OK-	DC OK Return
	6	C/D	Conversion direction manually control signal. This pin is enabled when the Bi-C signal is low.
	10	CANL	CAN-Bus low Communication pin.
	11	PS_ON	Remote ON/OFF control pin
	12	DC_OK+	DC OK Positive
	13	Bi-C	Bi-directional Control signal.
	7, 14	5VCAN	This is the CAN-Bus 5V voltage supply pin

Connector	Pin	Assignment	Function/Description
CN301 (For models with 150V output or above)	1, 2	Current share	This pin must be connected for current share function

LED & signals Indicator

Operation Mode	Power Supply Condition	Alert	Front		Back		DC_OK
			Green LED	Yellow LED	Green LED	Yellow LED	
Normal Operation	AC-DC operation	Low	On	Off	On	Off	High
	DC-AC operation	Low	Blink	Off	On	Off	High
	Standby Mode	Low	Off	Blink	On	On	Low
Fault Condition	DC Undervoltage	High	Off	On	On	Off	Low
	DC Overvoltage	High	Off	On	On	Off	Low
	Fan fault	High	Off	On	On	Off	Low
	Over Temperature	High	Off	On	On	Off	Low
	AC Undervoltage	High	Off	On	Off	On	Low
	DC Overcurrent	High	Off	On	On	Off	Low
	AC Overcurrent	High	Off	On	On	On	Low
	Islanding	High	Off	On	On	On	Low

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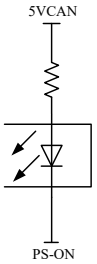
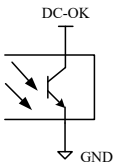
Remote ON/OFF

PS_ON Pin can be used to remotely turn on and off the power supply unit. This pin can be directly connected to common or controlled by a transistor connected to common on the system backplane. Low to shut down the power supply. Open or high to turn on the power supply. This pin also can be used to clear any latched fault condition.



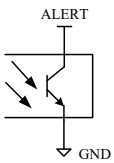
DC_OK Signal

DC_OK Signal is designed to indicate the main DC output status. When DC output is present, DC_OK Signal (Shown in below figure) generated will be high. When DC output is off, the internal transistor will be turned off. When AC input is off, there will be a minimum of 5 milliseconds between the time the DC_OK internal transistor turns off, and the time when the output reaches 90% of its rated value.



ALERT

The ALERT signal is an indicator of internal protections. The connection is an open-collector output. Low for normal operation, open for any protection triggered.

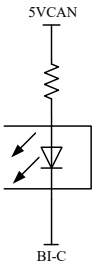


Remote Sense

Low voltage output models support remote sense feature. It can be used to compensate for the extra voltage drop on output wires that are connected from the main output terminals, to the load. With wires connected from the remote sense pins, at the same locations as the wires from the main output, the remote sense function can compensate up to 500mV voltage drop.

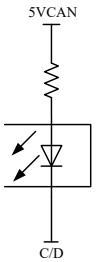
Operation Mode

BI-C Pin can be used to control the switching mode of conversion direction. This pin is internally connected to an opto-coupler.
When this pin is floating the conversion direction is determined automatically by DC side load energy flow;
When this pin is low the conversion direction is manually switched by C/D signal.



Operation Direction

The C/D Pin can be used to control the conversion direction of power supply. This pin is internally connected to an opto-coupler.
Pull low to force the power supply into DC to AC operation direction; Floating to force the power supply into AC to DC operation direction.
The function can be initialized as enable or disable by BI-C signal or CAN Bus



CAN/RS485 Communication

Use CAN bus or RS485 protocol to control the power supply unit via communication. Please contact for detail communication specification.

Current Sharing

VP6000 series supports current sharing function on DC Output side. Please contact for detail.
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