Spec No.:XM2502110021-1

TECHNICAL SPECIFICATION

PVM4000 Solar Converter Module

Version	Date	Prepared	Reviewed	Approved	Accepted
A	March 9, 2025	Monica (Designer)	Hong (Supervisor)	Peter (Branch manager)	

Address: No. 88 Qixin Road, NETDA, Nantong, Jiangsu, P.R. China, 226009
Tel:+86 513 8010 0986 | E-mail: sales@zttgroup.com | Website: www.zttgroup.com

Catalog

1. Overview

1.1. Product picture

1.2. Product performance profile

The photovoltaic module output is converted into a -48V communication power module, with an input voltage of 70~150VDC, a rated output voltage of 53.5Vdc, and a total output power of 4000W. The power supply has functions such as input undervoltage, overvoltage protection, output overcurrent protection, output overvoltage protection, output short circuit protection, and overtemperature protection.
This power supply has the following features:

- With working status indicator light;
- Can be operated in parallel through CAN control;
- Low ripple noise;
- Overvoltage protection;
- Overtemperature protection;
- Output overcurrent protection;
- Output short circuit protection;
- Output overvoltage protection;
- Meet RoHS requirements

2. Reference standards and specifications

- EN55032
- CISPR32
- UL61000
- UL60950-1
- IEC 61000-4-5 2014
- IEC 61000-4-4 2012
- IEC 61000-4-11 2003
- IEC 61000-4-3 2006
- IEC 61000-4-2 2018
- IEC 61000-4-8 2009
- IEC 61000-3-2:2018
- IEC 61000-4-6: 2018

3. Electrical characteristics

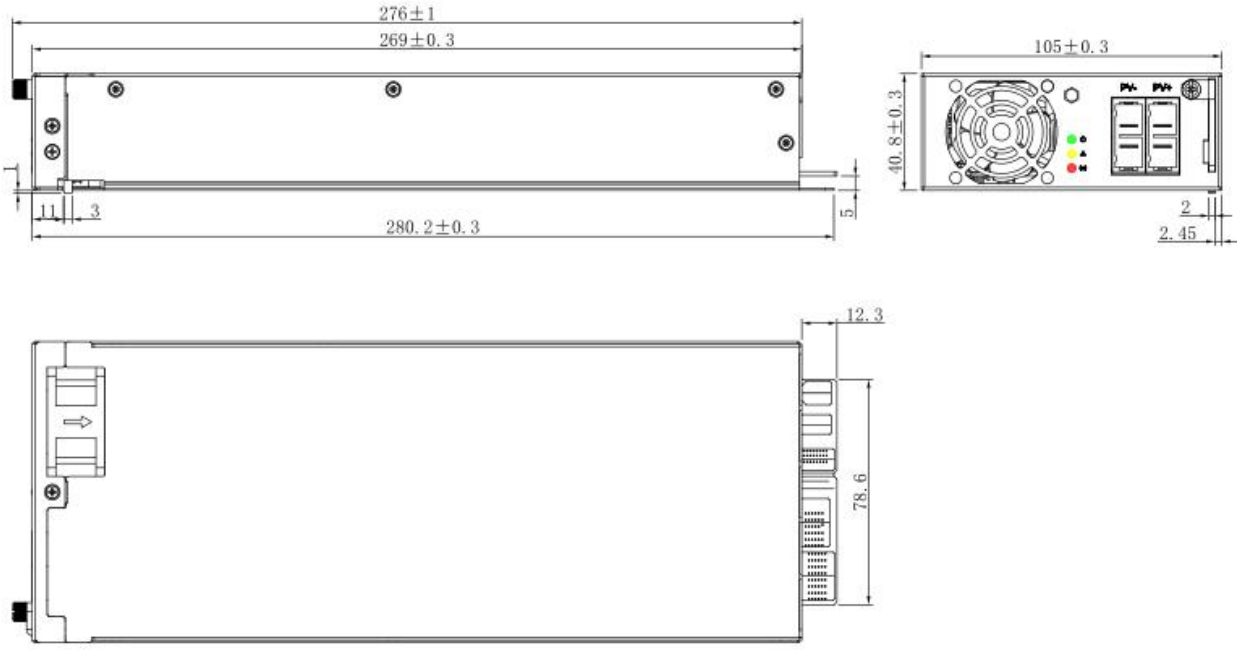
3.1 Input characteristics				
No.	Parameter name	Specific value	Unit	Remark
3.1.1	Input voltage rating	100	Vdc	
	DC input voltage range	70-150		
3.1.2	Surge current	⩽96	A	100Vdc input
3.1.3	Maximum input current	60	A	
3.2 Output characteristics				
3.2.1	Output voltage range	42~58V	Vdc	
3.2.2	Output voltage typical value	53.5	Vdc	
3.2.3	Output current maximum value	80	A	
3.2.4	Output power	4000	W	100Vdc
3.2.5	Efficiency	⩾97.5% (half load)	%	100Vdc
3.2.6		⩾97(full load)		
3.2.7	Ripple and noise	⩽500	mVp-p	Oscilloscope bandwidth is limited to 20MHz
3.2.8	Output hold time	⩾8	ms	
3.2.9	Temperature coefficient	⩽ ± 0.02	%/℃	
3.2.10	Voltage regulation rate	⩽144	mv	
3.2.11	Load regulation rate	⩽144	mv	
3.2.12	Output voltage accuracy	⩽0.5	%	
3.2.13	Output current accuracy	⩽1	%	
3.3 Protection features				
3.3.1	Input undervoltage protection point	70 ± 5	Vdc	
3.3.2	Input undervoltage recovery point	80 ± 5	Vdc	
3.3.3	Input overvoltage protection point	155 ± 5	Vdc	
3.3.4	Input overvoltage recovery point	140 ± 5	Vdc	
3.3.5	Output overvoltage protection	⩾58.5	Vdc	With 5A Test
3.3.6	Output short circuit protection	Have	-	
3.3.7	Overtemperature protection	Have	-	
3.3.8	CAN communication	Have	-	
3.3.9	Parallel operation	Have	-	Up to 48 power supplies can be connected in parallel

3.3.10	Remote control	Have	-	CAN control
3.3.11	Output overcurrent protection	⩾83	A	
3.4 Environmental conditions				
3.4.1	Operating temperature	-40 — +75	℃	It can work normally at -40℃. Output power starts to derate when the ambient temperature is between 45℃ and 75℃
3.4.2	Storage temperature	-40 — +85	℃	
3.4.3	Relative humidity	Work	⩽90%	
		Storage	⩽95%	
3.4.4	Altitude	⩽2000	m	When the altitude is higher than 2000m, the output power starts to decrease.
3.4.5	Cooling method	Forced fan cooling		

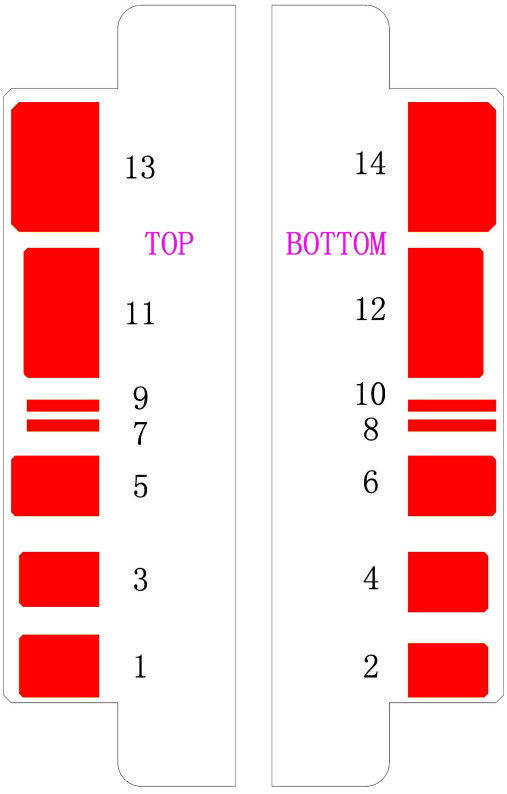
3.5 Safety & EMI characteristics			
Item		Standard (or test condition)	Remark
Dielectric strength	Input-Ground	707Vdc/30mA/ 1min	No breakdown or arcing; leakage current less than 30mA
	Input - Output /CAN	707Vdc/30mA/ 1min	
Insulation resistance	Output /CAN - Ground	⩾5MΩ@500Vdc	Ambient temperature: 25 ± 5℃ Relative humidity: less than 95% (no condensation)
	Input-Ground	⩾5MΩ@500Vdc	
Safety standards		UL60950-1, UL508, CSA C22.2 No.60950-1	
Leakage current		⩽3.5mA	100Vdc
Lightning strike		8/20us 5KA	
Surge immunity	Input line to line, line to ground	500V	No cracks or alarms were found in the power supply during or after the test
	Output line to line, line to ground	500V	
Electrostatic discharge immunity		Contact discharge 6kV, air discharge 8kV	No cracks or alarms were found in the power supply during or after the test
Radiated electromagnetic field immunity		Frequency range 30MHz-1GHz, according to EN 55032 class A, 10 meters distance	
Conducted immunity		Frequency range 150 kHz-30MHz,according to EN 55032 class A	

3.6 Mechanical characteristics			
3.6.1	Product weight	⩽2000	g
3.6.2	Dimensions (length x width x height)	287.14 ± 0.5 × 105.0 ± 0.3 × 40.8 ± 0.3	mm

4. Overall appearance



5. Goldfinger connection definition



Pin	Definition	Function
1, 2	/	/
3,4	/	/
5,6	PE	earth
7	CANH	CANH

9	CANL	CANL
8	/	/
10	Pre-charge	Pre-charge
11,12	OUTPUT-	Output 48V-
13,14	OUTPUT+	Output 48V+

6. Efficiency curve

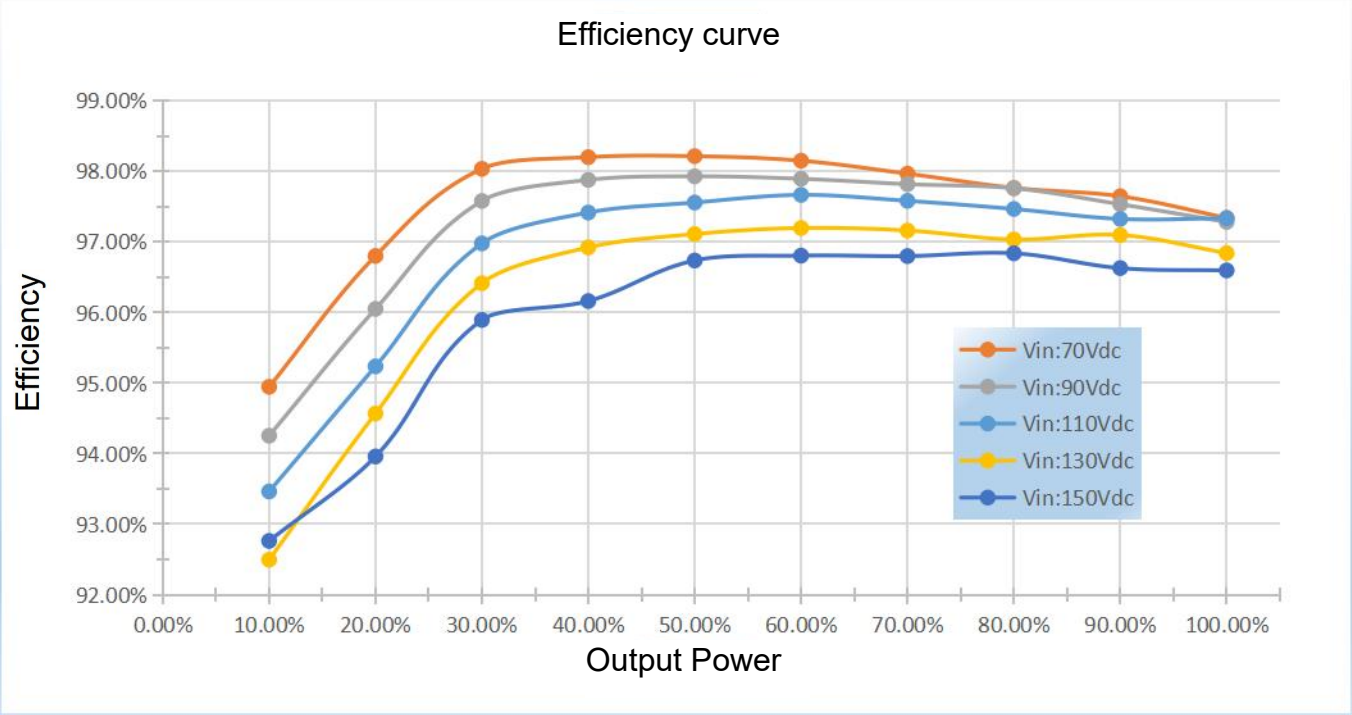


Table 1: Efficiency curve

7. Output derating curve

7.1. Output power and temperature derating curve

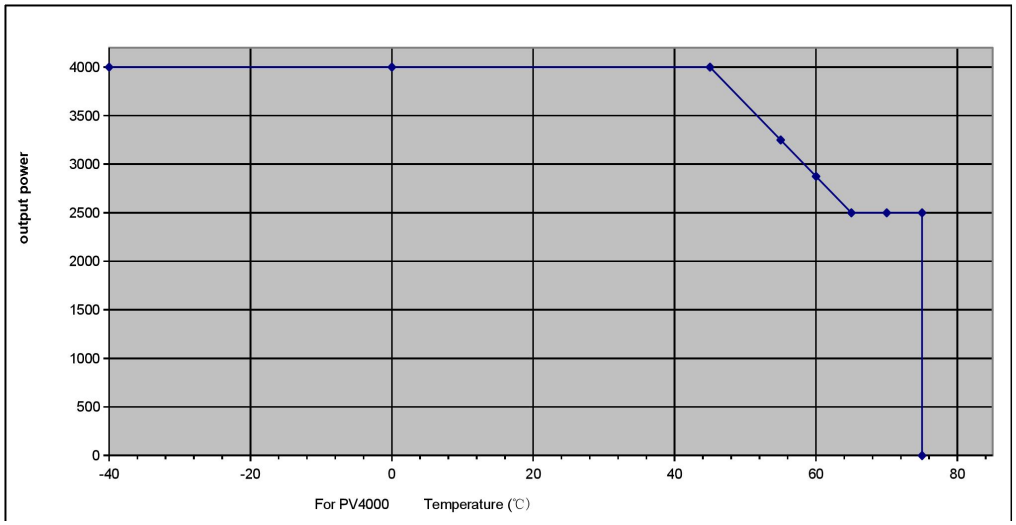


Table 2: Temperature derating curve

7.2. Output current and output voltage derating curve

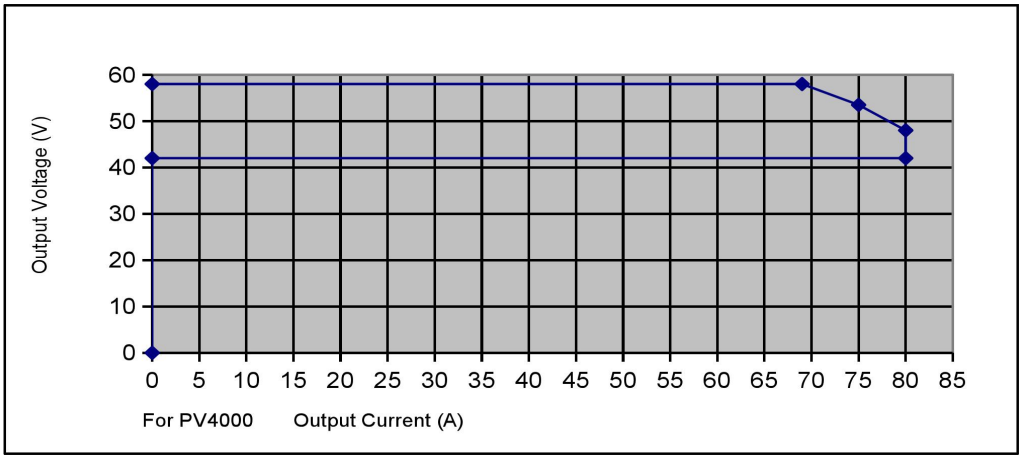


Table 3: Output voltage and output current curve

7.3. Output power and input voltage derating curve

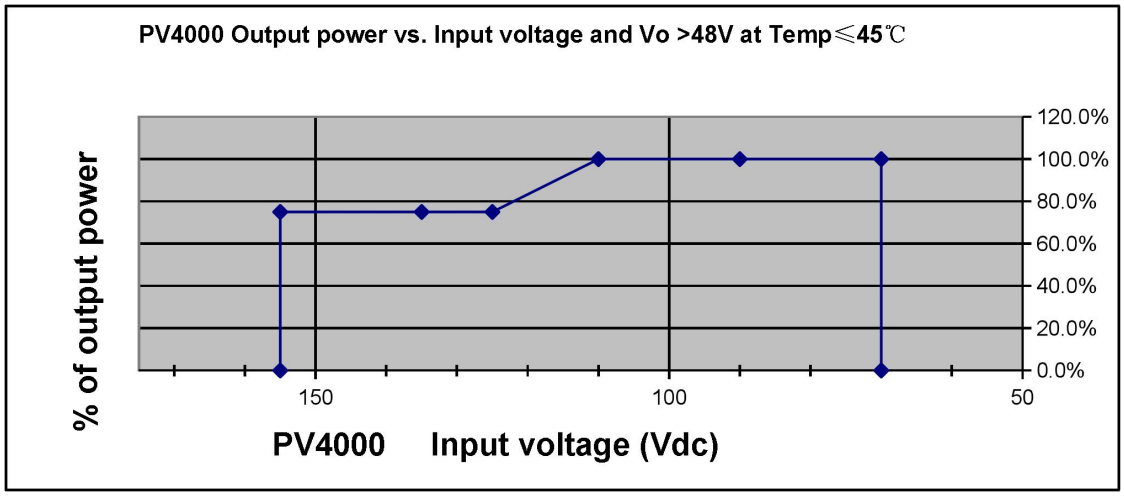


Table 4: Output power and input voltage derating curve

8. Definition of indicator light

Indicator lights	Color	Status
Operation indicator lights	Green	The green light is on when the input voltage is normal, and the green light flashes when connected to the monitor
Protection indicator lights	Yellow	The yellow light is always on when the input over-voltage, under-voltage, over-temperature protection and power bus voltage are abnormal, and the load is not evenly distributed, and the yellow light flashes when the CAN communication is abnormal
Fault indicator lights	Red	The red light is on when the output is overvoltage, the module is faulty, and the power is shut down, and the red light flashes when the fan is faulty.