SmartGen

MAKING CONTROL SMARTER

PDC2420

DC/DC ISOLATED POWER

USER MANUAL

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SmartGen **Registered trademark**

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Table 1 – Software Version

Date	Version	Content
2022-03-03	1.0	Original release.
2022-04-26	1.1	Modify the appearance, dimensions diagram and name of the product .
2025-11-28	1.2	Modify the parameter configuration descriptions and add the troubleshooting.

CONTENT

1 OVERVIEW

PDC2420 is an intelligent DC/DC isolated power with multiple protection, which is suitable for equipment requiring DC24V isolated power supply. The max rated output current is 20A.

2 PERFORMANCE AND CHARACTERISTICS

——It adopts switch power type structure with wide DC range, small size, light weight and high efficiency;
——Isolated design for input and output, isolated voltage is AC3kV;
——With standard RS485 serial communication port applying MODBUS communication protocol;
——Digitized parameters, all parameters can be set and monitored via the RS485 communication port by connecting to a host PC.
——LED power indicator will illuminate for power-on, flash in fault protection;
——Horizontal screw installation is adopted, simple and easy to install it.

3 SPECIFICATION

Table 2 – Product Parameters

Type	Item	Parameters
Input Characteristics	Rated Voltage	DC 24V
	Voltage Range	DC (18~72)V
	Max Current	34A
	Max Power	605W
	Max Efficiency	92%
Output Characteristics	Rated Voltage	DC 24V
	Voltage Range	DC (22~28)V, adjustable via potentiometer
	Rated Current	20A
	Rated Power	480W
Protection	Input Undervolt	Undervoltage protection threshold DC17.5V
	Output Overvolt	When any of these five abnormalities is triggered, the power supply will engage in self-protection and shut down the output voltage. It can auto-recover when the abnormality is resolved.
	Output Undervolt	
	Output Overcurrent	
	Overtemp. Protect	
	Fan Cooling	Built-in DC fan forced cooling: operates at high speed when the load current exceeds 10A.
Safety Requirements & EMC	Safety Requirements	IEC60255-27, CE certificate
	Insulation Withstand Voltage	AC3kV 50Hz 1min for input and output, input and enclosure Leak current I_L≤3.5mA

Type	Item	Parameters
		AC500V 50Hz 1min for output and enclosure Leak current I_L≤3.5mA
	Insulation Impedance	DC 0.5kV 1min condition for input and output, input and enclosure Insulation resistance R_L≥50MΩ
	EMI	Accord with IEC61000-6-4
	EMS	Accord with IEC61000-6-2
Working Environment	Working Temp.	(-30~+55)°C
	Working Humidity	20%RH~93%RH (No condensation)
	Vibration	(8~500)Hz, a=4g, 1 test for each three perpendicular directions
Storage Environment	Storage Temp.	(-40~+85)°C
Overall Structure	Weight	1.51kg
	Overall Dimension	218.9mm×155mm×69mm (L×W×H)
	Installation Dimension	143mm×130mm (L×W)

4 PARAMETER CONFIGURATION

Table 3 Parameter Configuration

No.	Type	Default	Range	Description
1	Rated Output Volt	DC 24.0V	DC (22~28)V	Adjustable via potentiometer.
2	Rated Output Current	20.0A	(0.10~20.00) A	Adjustable via host PC.
3	Protection Off Time	5s	(0~600)s	The restart interval after output protection shutdown.
4	Unvervolt Protection	75%(18.0V)	(10~120)%	DC24V percentage of rated output voltage. Undervoltage protection threshold (2.4V-28.8V).
5	Unvervolt Protection Delay	1s	(0~600)s	Undervoltage protection delay of output voltage.
6	Overvolt Protection	125% (28.8V)	(80~200)%	DC24V percentage of rated output voltage. Overvoltage protection threshold.
7	Overvolt Protection Delay	1s	(0~600)s	The response duration for output overvoltage detection.
8	Overcurrent Protection	120% (24.0A)	(0~200)%	Rated output current percentage. Overcurrent protection threshold (0A-40A).
9	Overcurrent Protection Delay	1s	(0~600)s	The response duration for output overcurrent detection.

No.	Type	Default	Range	Description
10	Comm. Address	10	(1~254)	RS485 communication address.
11	Comm. Baud Rate	0	(0~2)	0. 9600bps; 1. 19200bps; 2. 38400bps.

5 CURVE DIAGRAM

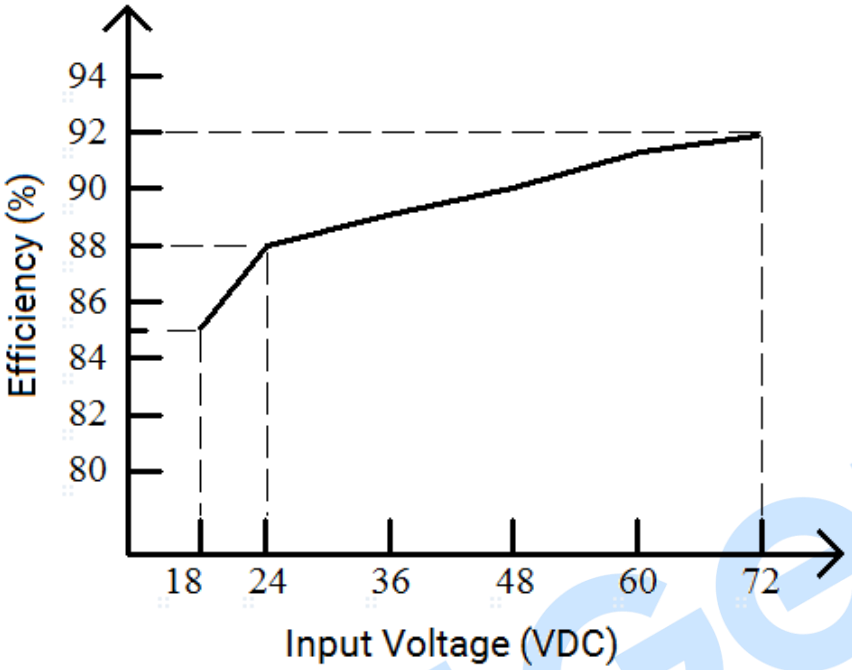

Fig.1 Efficiency Curve

6 OPERATION

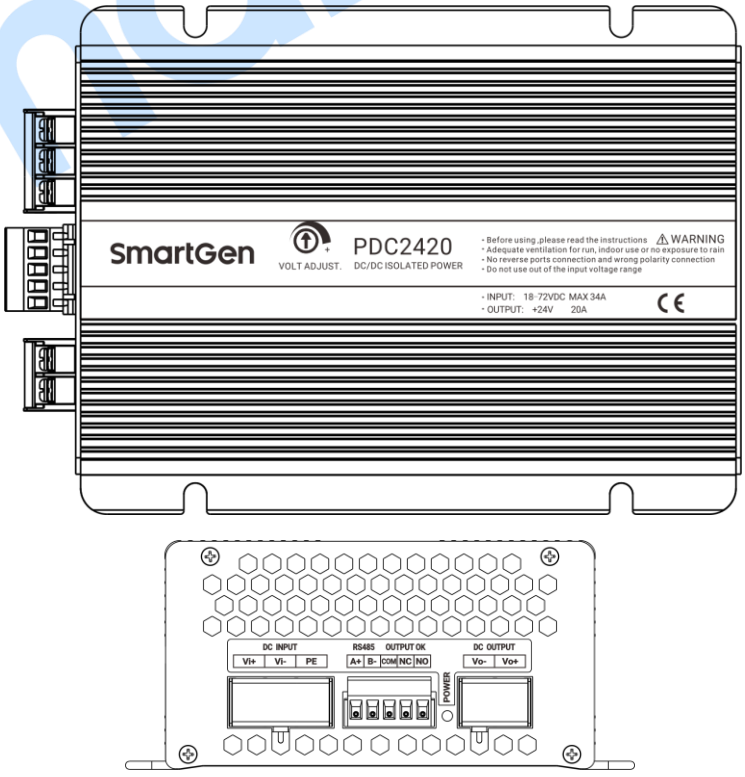

Fig.2 PDC2420 Panel

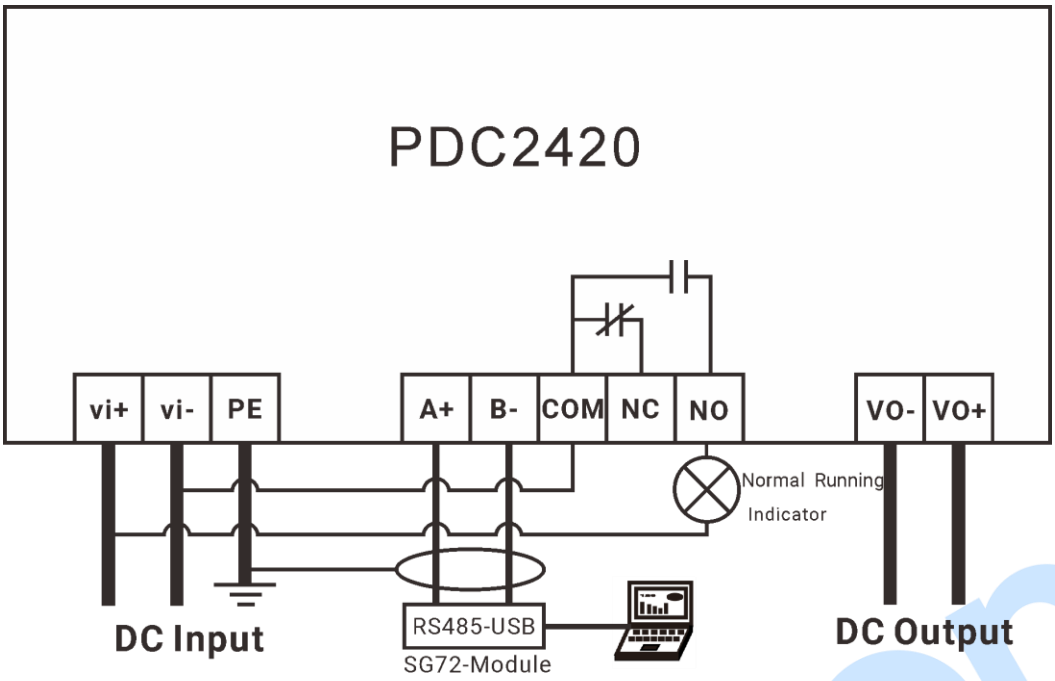

Fig.3 Wiring Diagram

Table 4 Wiring Description

Sign	Function	Description
Vi+	DC Input Terminal	Terminal Vi+, Vi- connects (18~72)VDC, over BVR6.0mm^2 is recommended to use.
Vi-		
PE	Ground Terminal	Connect to enclosure internally.
A(+)	RS485 Comm. Port	Standard RS485 serial communication port, shielding wire is recommended with its single-end earthed.
B(-)		
COM	Common Port	Relay rated voltage: 5A 250VAC; When running normally, the relay's normally open contact is closed; Relay's normally open contact opens when over/under voltage, overcurrent, over temperature protection occurs.
NC	Normally Close	
NO	Normally Open	
Vo-	Output Negative	Connect to negative terminal of equipment to be powered. Over BVR4.0mm^2 is recommended to use.
Vo+	Output Positive	Connect to positive terminal of equipment to be powered. Over BVR4.0mm^2 is recommended to use.
POWER	Green LED Indicator	Power output normal indicator (always illuminated when output is normal, flashes when over/under voltage, overcurrent, over temperature protection occurs).
VOLT ADJUST	Output Voltage Adjust	Adjusting output voltage DC(22~28)V of built-in potentiometer.

7 OVERALL AND INSTALLATION DIMENSIONS

Unit: mm

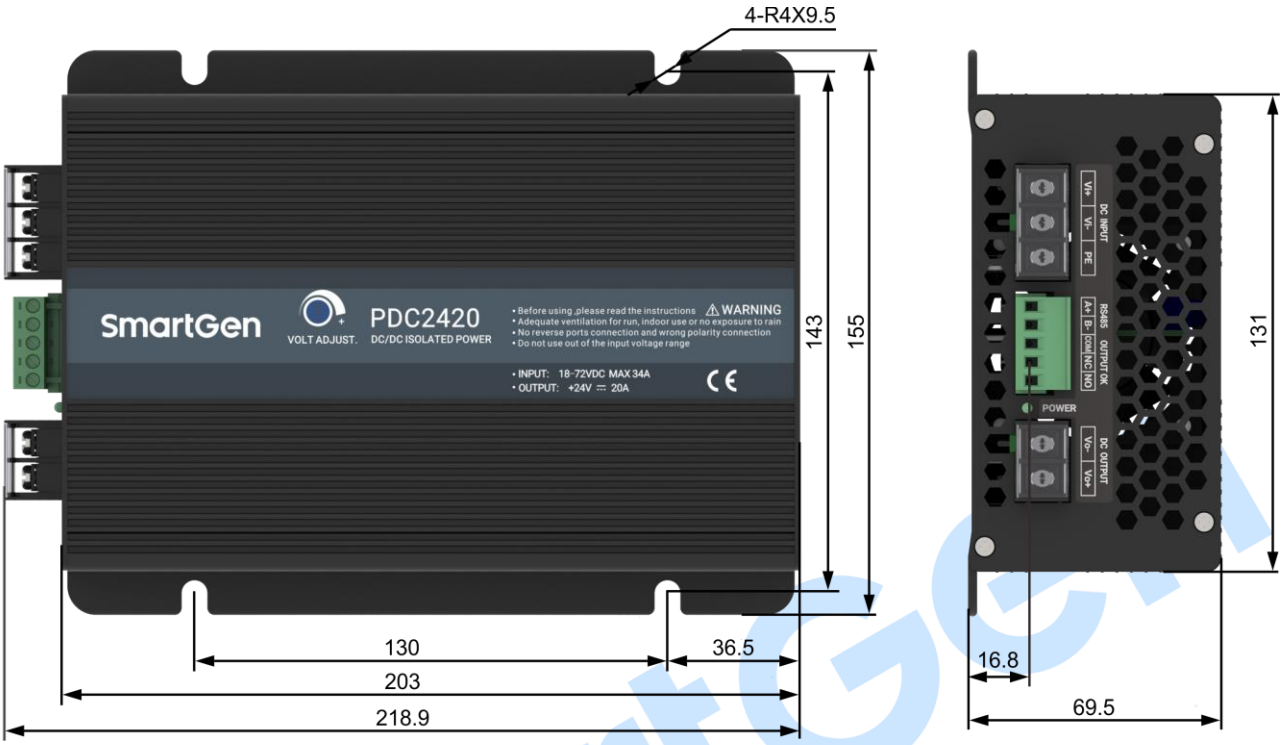

Fig.4 PDC2420 Dimensions

8 TROUBLESHOOTING

Table 5 Troubleshooting

Symptoms	Possible Measures
Output Voltage Fluctuation	The over/under voltage, and overcurrent thresholds on PC are improperly configured. Parameters can be reset by connecting to the PC software via RS485.
No Output Voltage	The input positive and negative are reversed, and the internal fuse is damaged. It needs to be returned to the factory for replacement; Ensure the input wire has a cross-sectional area of BVR 6.0mm² or above; Ensure the input port voltage is within the DC (18~72)V range.
RS485 Communication Failure	Incorrect communication port parameters (e.g., baud rate, stop bits) or device address settings; Check if the A and B terminals of RS485 are reversed; Incorrect PC communication port selection; It is recommended to add a 120Ω resistor between the A and B terminals of RS485.