BLITZPower

PDC High-precision Programmable DC Power Supply

Technical Specifications

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1. Product Overview

PDC high-precision programmable DC power supply provides high-precision and high-stability program-controlled DC voltage source and current source. This series of power supply is designed according to the standard cabinet structure, covering a wide range of output of 2000V and 200A, with a height of 1U and a capacity up to 5kW. It features high power density and light weight.

PDC's unique “full screen", "double shuttle" adjustment knob and “automobile-level" button design have better performance in industry, laboratory and OEM applications, making the application testing more accurate and convenient.

2. Product Selection

Product	Rated Power (kW)	Voltage Range (V)	Current Range (A)	Voltage Ripple RMS (mV) (5Hz-1MHz)	Programming uptime (ms)	Programming droptime @ Full Load (ms)	Current ripple RMS @ Rated Voltage (mA)	Input Voltage (V)
PDC0220N	1.7	0-20	0-200	10	30	50	300	220
PDC0317N	1.7	0-30	0-170	12	30	80	150	220
PDC0412N	1.7	0-40	0-125	12	30	80	75	220
PDC0608N	1.7	0-60	0-85	12	50	80	50	220
PDC0806N	1.7	0-80	0-65	15	50	100	35	220
PDC1005N	1.7	0-100	0-50	15	50	100	23	220
PDC1503N	1.7	0-150	0-34	20	50	100	23	220
PDC3515N	1.7	0-350	0-15	60	50	100	7.5	220
PDC7507N	1.7	0-750	0-7	100	100	200	4	220
PDC0220S	3	0-20	0-200	10	30	50	300	220
PDC0317S	3	0-30	0-170	12	30	80	150	220
PDC0412S	3	0-40	0-125	12	30	80	75	220
PDC0608S	3	0-60	0-85	12	50	80	50	220
PDC0806S	3	0-80	0-65	15	50	100	35	220
PDC1005S	3	0-100	0-50	15	50	100	23	220
PDC1503S	3	0-150	0-34	20	50	100	23	220
PDC3515S	3	0-350	0-15	60	50	100	7.5	220
PDC7507S	3	0-750	0-7	100	100	200	4	220
PDC2K02S	3	0-2000	0-1.5	300	100	200	4	220
PDC0220SH	3	0-20	0-200	10	30	50	300	220
PDC0317SH	3	0-30	0-170	12	30	80	150	220
PDC0412SH	3	0-40	0-125	12	30	80	75	220

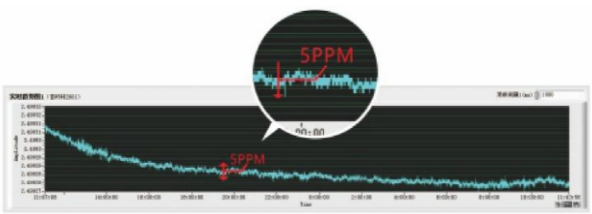
PDC0220L	3.6	0-20	0-200	10	30	50	300	380
PDC0317L	3.6	0-30	0-170	12	30	80	150	380
PDC0412L	3.6	0-40	0-125	12	30	80	75	380
PDC0608L	3.6	0-60	0-85	12	50	80	50	380
PDC0806L	3.6	0-80	0-65	15	50	100	35	380
PDC1005L	3.6	0-100	0-50	15	50	100	23	380
PDC1503L	3.6	0-150	0-34	20	50	100	23	380
PDC3515L	3.6	0-350	0-15	60	50	100	7.5	380
PDC7507L	3.6	0-750	0-7	100	100	200	4	380
PDC0220M	4	0-20	0-200	10	30	50	300	380
PDC0317M	5	0-30	0-170	12	30	80	150	380
PDC0412M	5	0-40	0-125	12	30	80	75	380
PDC0608M	5	0-60	0-85	12	50	80	50	380
PDC0806M	5	0-80	0-65	15	50	100	35	380
PDC1005M	5	0-100	0-50	15	50	100	23	380
PDC1503M	5	0-150	0-34	20	50	100	23	380
PDC3515M	5	0-350	0-15	60	50	100	7.5	380
PDC7507M	5	0-750	0-7	100	100	200	4	380
PDC0220MH	4	0-20	0-200	10	30	50	300	380
PDC0317MH	5	0-30	0-170	12	30	80	150	380
PDC0412MH	5	0-40	0-125	12	30	80	75	380

3. Product Advantages

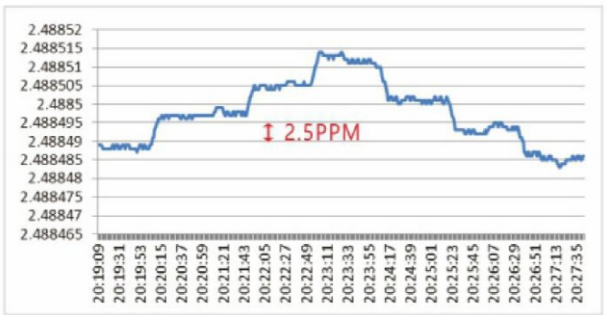
3.1 High Stability

The current stability can reach ±10ppm/8 hours under room temperature, greatly improve the beam control accuracy of particle accelerator and medical accelerator industry.

Less than 5 ppm of the resolution makes the output finer and more process details are found.



Stability bandwidth waveform



Resolution adjustment waveform

3.2 High Precision

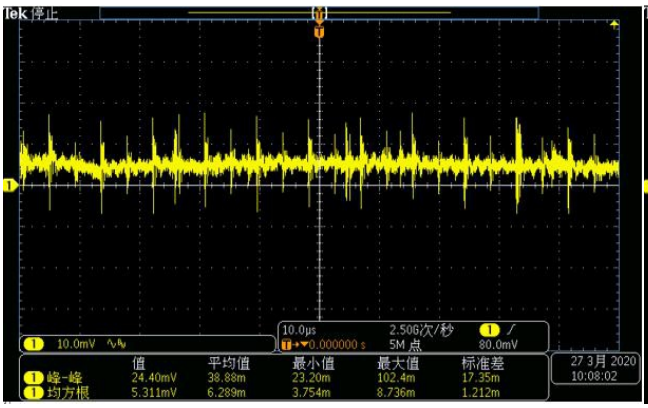
PDC has a built-in independent high-precision voltage and current measurement system, which provides an output

voltage with an accuracy of up to **±0.02%F.S.**, and can replace the combination of high-voltage high-precision DC voltmeter, high-precision ammeter and ordinary power supply. All tests can be completed with one power supply.

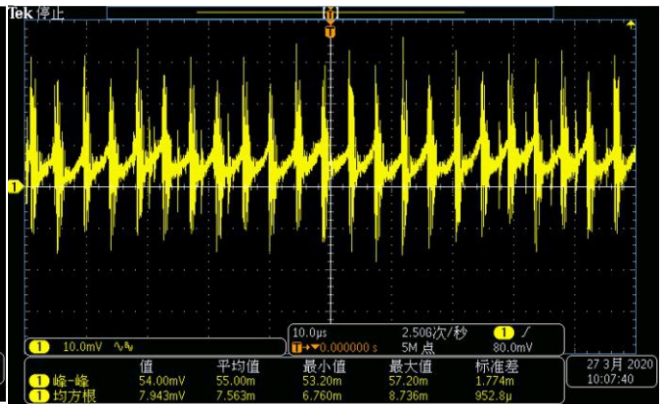
290V output measured value

3.3 Low Noise

PDC has low ripple and noise, and the effective value of voltage ripple is as low as 10mV, to provide high-quality output voltage waveform and improve the product test accuracy.



0806S: 80V no-load voltage ripple



0806S: 80V full-load voltage ripple

3.4 Programming Control Function

PDC has built-in isolation analog programming and node interface. Users can use 5V or 10V analog to control the output voltage and current of the programming power supply through the REMOTE interface of the PDC rear panel. At the same time, the REMOTE interface of the rear panel also provides customers with monitoring signals of output voltage and current, to facilitate the connection to the PLC system and integration of test systems such as ATE.

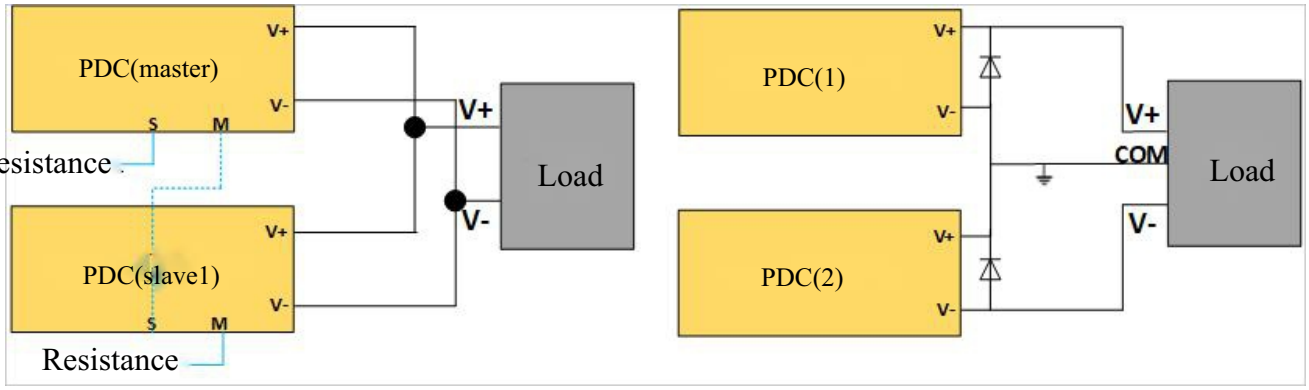
4. Product Function

4.1 Automatic Master-slave installation Connection

Automatic selection of master-slave mode, automatic parallel operation, supporting parallel operation of multiple power supplies, host programming, testing and reporting of the total current value, and displaying of characteristics of one power supply.

Optional combined capacity expansion system, with which the system can be expanded to a larger capacity; the two power supplies can operate in series to increase the output voltage or form a bipolar power supply system.

Built-in daisy-chain mode can control up to 99 devices by bus without increasing route or node HUB.

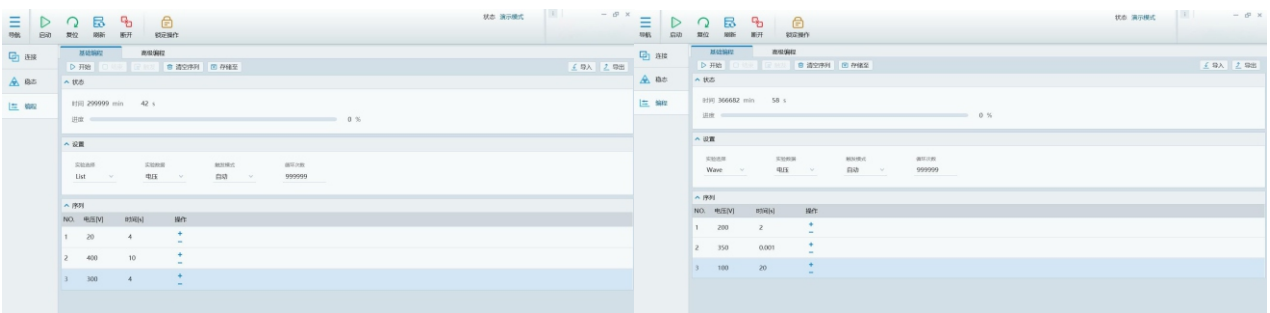


Master-slave in parallel

Positive and negative outputs in series

4.2 Waveform Programming Function

PDC has the function of outputting advanced waveform programming, including List and Wave modes, with a minimum programming time of 1ms, supporting 200 programming steps and storing 10 groups of programming data. PDC has built-in programming waveform up to 999 steps, which can be stored and called with one click to meet test requirements.



List Waveform Programming

Wave Waveform Programming

4.3 Four Operating Modes

PDC power supply has four operating modes: CV, CC, CV/CP and CC/CP. It has the super capability of DC voltage source and current source to meet the different testing needs of different customers.

CV/CP Mode Setting

4.4 Internal Resistance Function

The internal impedance of PDC is programmable, and the setting range is 0-10Ω. By simulating the internal voltage drop of the power supply, the impedance of the external output cable of the power supply is indirectly simulated. At the same time, this function can also be used to simulate the working characteristics of batteries.

Internal Resistance Setting

5. Applications

- **Medical accelerator**
- **Particle accelerator for scientific research**
- **Aerospace satellite test**
- **Development of green energy technology**
- **Semiconductor aging test**
- **ATE**

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6. Specification and Size

PDC Series 1U Product Dimension Drawing

7. Table of Technical Specifications

Indicators	Technical Parameters
Input	
Input voltage/frequency	220V model: 185~265Vac; 47~63Hz
	380V model: 304~460Vac; 47~63Hz
Maximum input current at 100% load	15A@220Vac
	9.2A@380Vac
Surge current	30A@220Vac
	15A@380Vac
Power factor	0.97
Efficiency (%)	91 @20V-350V model
	92 @350V-2000V model
Constant voltage mode	
Programming accuracy	± 0.02% of rated voltage
Accuracy	±0.02% of rated voltage
Line regulation	±0.01% of rated voltage
Load regulation ①	0.01% of rated output voltage
Temperature coefficient	20PPM/°C of rated output voltage (30 minutes after power-on)
Transient response time	When the load current changes in the range of 10-90% of the rated output current, the time required for the change in output voltage to recover to the level of less than 0.5% of the rated output voltage: 1. Less than 1ms for the model below 100V 2. Less than 2ms for the model ≥100V
Constant current mode	
Programming accuracy	±0.1% of rated current, ±0.05% for high-performance version ④
Display accuracy	±0.1% of rated current, ±0.05% for high-performance version
Line regulation	±0.01% of rated current
Load regulation ①	±0.1% of rated output current, ±0.05% for high-performance version
Temperature coefficient	20PPM/°C of rated output current, high-performance version: 5PPM/°C (30 min after power-on).
Constant power mode	
Programming resolution	0.1W
Programming accuracy	±0.1% at rated power
Display resolution	1W
Display accuracy	±0.1% at rated power
Internal resistance mode	
Rated impedance	10 Ω

Setting resolution	0.1mΩ
Setting accuracy	±1% of rated impedance
Programming	
Programming mode	List、Wave
Programming steps	200 steps
Cycles	999999
Minimum programming time step	1ms
Operation mode	Load, end, and trigger
Analog programming and monitoring (isolated from output)	
Voltage programming of output voltage	0-100%, 0-5V or 0-10V, to be defined by users. Accuracy and linearity: ±0.1% of rated output voltage
Voltage programming of output current ②	0-100%, 0-5V or 0-10V, to be defined by users. Accuracy and linearity: ±0.1% of rated output voltage
Resistance programming of output voltage	0-100%, 0-5/10 kΩ full scale, to be defined by users. Accuracy and linearity: ±0.5% of rated output voltage
Resistance programming of output current ②	0-100%, 0-5/10 kΩ full scale, to be defined by users. Accuracy and linearity: ±0.5% of rated output voltage
Output voltage monitoring	0-5V or 0-10V, to be defined by users. Accuracy: ±0.1% F.S.
Output current monitoring ②	0-5V or 0-10V, to be defined by users. Accuracy: ±0.1% F.S.
Signal and control (isolated from output)	
Normal signal	Power output monitoring. Collector open circuited. Output ON: on. Output OFF: off. Maximum voltage: 30V, maximum sink current: 10mA.
CV/CC signal	CV/CC monitoring. Collector open circuited. CC mode: on. CV mode: off. Maximum voltage: 30V, maximum sink current: 10mA.
LOCAL/REMOTE control	Enable/disable analog programming control via electrical signal or dry contact. External control: 0~0.6V or short circuit. Local machine: 2~30V or open circuit.
LOCAL/REMOTE monitoring	Analog programming control monitoring signal. Collector open circuited. External control: on. Local machine: off. Maximum voltage: 30V, maximum sink current: 10mA.

ENABLE/DISABLE signal	Enable/disable PS output via electrical signal or dry contact. 0~0.6V or short circuit, 2~30V or open circuit. Logic can be defined by users.
INTERLOCK (ILC) control	Enable/disable PS output via electrical signal or dry contact. Enable: 0~0.6V or short circuit. Disable: 2~30V or open circuit.
Programming signal	Programmable signal of two open drains. Maximum voltage: 25V, maximum sink current: 100mA (via 27V Zener diode bypass)
TRIGGER IN/TRIGGER OUT signal	Maximum low-level input voltage =0.8V, minimum high-level input voltage =2.5V, maximum high-level input =5V, rising edge trigger: Tw=10μs (minimum value), Tr/Tf=1μs (maximum value), and the minimum delay between 2 pulses is 1ms.
Functions	
Parallel operation	Support. Multiple identical power supplies in master/slave mode. Please refer to the application manual.
Series operation	Support. 2 identical power supplies. Please refer to the application manual.
Daisy chain	The power supply can be connected by daisy-chain to synchronize the opening and closing.
Constant power control	Limit the output power to the set value. It can be set through communication port or front panel.
Output impedance control	Simulative series resistance. It can be set through communication port or front panel.
Change rate control	The rise and fall change rate of output can be set. It can be set through communication port or front panel.
Various waveform	The curve consisting of up to 999 steps can be stored in 10 storage units, and can be activated by communication command or front panel.
Communication interface	LAN,RS232/485,USB
Environment	
Operating temperature	0~50°C, output current derating for 2%/1°C at a level above 40°C
Storage temperature	-20°C~85°C
Operating humidity	20~90% RH (without condensation)
Storage humidity	10~95% RH (without condensation)
Altitude: ③	During operation: 10000ft (3000m); output current derating for 2%/100m or Ta derating for 1°C/100m at a level above 2000m Not in operation: 40000ft (12000m)
Machinery	
Cooling mode	Forced air cooling through built-in fan. Air flow direction: from the front panel to the rear of the power supply.
Weight (kg)	<9kg
Dimension (W×H×D)	423mm×43.6mm×441.5mm
Insulation impedance	Above 100MΩ (25°C, 70% RH)

Notes:

①: Constant voltage: The input voltage and output voltage are constant, and the output current varies from 0 to 100% (measured at the remote compensation point);

Constant current: The input voltage and output current are constant, and the output voltage varies from 0 to 100%;

Constant power: The input voltage and output power are constant, and the output voltage and current vary from 0 to 100%.

②: The accuracy of constant current programming, readback and monitoring does not include thermal machine drift, load adjustment drift and temperature drift;

③: For 20V model, Ta derating is 2°C/100m;

④: For high-performance version ordered, "-H" is added after the model code, for example: PDC0412M-H.