

Chapter 1 Introduction

TRC2021 Series

HV DC power supply | 130kV,300W,high precision



- Output 130kV,300W
- Ripple less than 0.1%p-p
- Voltage and current dual close loop adjustment
- Digital display
- OV, OC, Short-circuit, Arc protection
- 0~10V control signal

Product Introduction :

Teslaman TRC2021 series high-voltage power supply is a 19-inch standard rack-mounted power supply. It can deliver up to 130kV at 300W, with a peak-to-peak ripple better than 0.1% of the rated output. It features digital voltage and current indicators and employs dual-loop control for both voltage and current, enabling a linear and stable increase in high-voltage output. The TRC2021 series power supplies can also be connected to external potentiometers, allowing remote control of output voltage and current via a 0~10V analog signal. Additionally, they provide external voltage and current displays and incorporate multiple protection functions, including overvoltage, overcurrent, short-circuit, and arc protection.

Application :

Capillary electrophoresis, electrostatic spraying, electrospinning, electrostatic flocking, and other electrostatic-related applications; electron beam systems; ion beam systems; accelerators; other scientific experiments.

Specifications :

Input	AC220V±10%,50/60Hz.
Output	Maximum output voltages could be customized from 1kV to 130kV, and the maximum output power is 300W. 0 to the highest voltage is continuously adjustable, and the output is positive and negative single polarity.
Voltage Control	Local control: The multi-turn potentiometer of the power supply can set the output voltage between 0 and the highest voltage. External remote control: External 0 to 10V control signal can adjust the output from 0 to the highest output voltage.
Current Control	Local control: The multi-turn potentiometer of the power supply can set the output current between 0 and the highest current. External remote control: External 0 to 10V control signal can adjust the output from 0 to the highest output current.
Voltage Regulation:	Load: 0.01% of output voltage no load to full load. Line: ±0.01% for ±10% change in input voltage.
Current Regulation	Load: 0.01% of output current from 0 to rated voltage. Line: ± 0.01% for ±10% change in input voltage.
Ripple Voltage	Under rated output conditions, the ripple voltage is 0.1% p-p.
Environmental	Operational: 0 °C to + 50 °C. Storage:-20 °C to + 80 °C.
Temperature Coefficient	Less than 100ppm/°C.
Stability	Less than 0.01% every 8 hours after 1/2 hour warm up.

Voltage and Current Indication	0 to + 10V, with accuracy of 1% under rated output conditions
Overall Dimensions	Width 483mm, Height44.5mm, Deep 483mm.
Connectors	High Voltage Output Connector: Recessed epoxy insulated conduit and probed high voltage cable are connected by a 16mm diameter metal connector. The standard high voltage cable is 2 meters long. Input and output connector: 25-pin terminal, including control and display signals.
Remote Voltage and Current Control	External potentiometer can be used to control the output voltage and current remotely by using 10V reference voltage inside the power supply.
Remote Voltage and Current Indication	25-pin terminal contains 0 to 10V voltage and current indication signals, which can be externally connected with various digital or pointer meters

Standard Functions:

HV slow start: This feature allows the high-voltage output to rise smoothly at the slope required by the design, with this rise time typically being around 4 seconds. The start condition for the ramp-up is the triggering of the high-voltage startup control signal.

Note: The special soft-start time is based on actual specifications.

HV indicator: Green for HV off, Red for HV on.

Display: The digital LCD display on the front panel can show the current voltage and current values in real-time.

HV output port: Power supply contain a HV output port.

HV cable: The standard power supply includes a 2-meter long high-voltage insulated cable. One end of the cable has a high-voltage plug and a connector that can be easily secured to the power supply housing.

Voltage and Current Monitor Function

Monitor: The monitor function for output voltage and current is achieved through the DB25 connector terminals J1-9 and J1-10 on the rear panel.

Remote control: In addition to controlling the output voltage and current with the potentiometer on the front panel, the power supply can also achieve remote control of voltage and current through the corresponding terminals of the DB25 pin connector on the rear panel. For detailed operations, see Chapter Three.

Model name description

The model code represents the performance and parameters of the power supply, which are:

Maximum output voltage in kV (kV);

Maximum output power in W (watt);

Output polarity, P for positive output, N for negative output;

Optional code, beginning with A, and every two digits indicate a function;

TRC2021	P	130	–	300
Model	Polarity	Maximum voltage		Maximum power

TRC2021 series model selection table:

Rated value		Model	
kV	mA	Positive	Negative
10	30	TRC2021P10-300	TRC2021N10-300
20	15	TRC2021P20-300	TRC2021N20-300
30	10	TRC2021P30-300	TRC2021N30-300
50	6	TRC2021P50-300	TRC2021N50-300
60	5	TRC2021P60-300	TRC2021N60-300
80	3.75	TRC2021P80-300	TRC2021N80-300
100	3	TRC2021P100-300	TRC2021N100-300
130	2.31	TRC2021P130-300	TRC2021N130-300

Voltage and current control (25-pin terminal)

Pin	Signal	Pin	Signal
1	+ 5V	14	NC
2	NC	15	NC
3	Fault indicator lamp	16	+ 12V
4	Ground	17	NC
5	Ground	18	High voltage off indicator lamp
6	+ 12V	19	High voltage turn-on indicator light
7	Ground	20	Ground
8	High pressure switch	21	High pressure on
9	Voltage display	22	Ground
10	Current display	23	Voltage given output
11	Voltage given input	24	+ 10V
12	Current given output	25	Current given input
13	+ 10V		

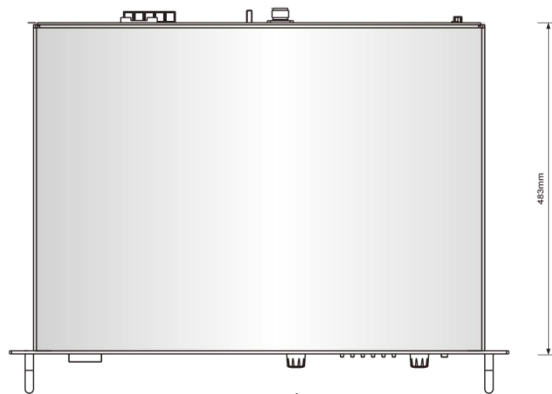
Terminal of 220V AC power supply

JP2	Signal	JP2	Signal
1	Live Wire	3	Neutral line
2	Ground		

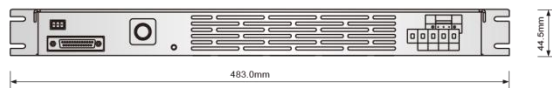
Dimensions: mm



Front View



Top View



Rear View