



## Yangzhou IdealTek Electronics Co., Ltd.

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*Ideal Power Solution*

## CCP Series High voltage Capacitor Charging DC Power Supply

- Power rating: 3KW ~ 6KW
- Voltage range: 1KV ~ 100KV
- Current range: 60mA ~ 6000mA
- 6U / 19-inch standard chassis
- RS485 & Analog signal ports for remote control.
- ARC & short circuit protections etc.



### Overview

The CCP-6U series high voltage power supply expands and upgrades the output capacity on the basis of the CCP-4U high voltage capacitor charging power supply. It adopts a 19-inch 6U standard rack-mount chassis, the output power can reach 6KW, and the output voltage level is 1KV / 2KV / 3KV / 4KV / 5KV / 6KV / 8KV / 10KV / 12KV / 15KV / 20KV / 30KV / 40KV / 50KV / 60KV / 70KV / 80KV / 100KV, the charging high-voltage power supply expands the output voltage and power range on the basis of maintaining high efficiency, high output response speed and faster protection

start self-recovery features.

The output voltage and current of the power supply can be controlled and read through the front control panel. And, this series of power supplies are also equipped with a DB50 interface as standard. Customers can edit the control software according to our communication protocol or apply 0 - 10V signal and dry contact signal on the interface according to our interface definition to achieve control and monitoring of the power supply, such as high voltage start/stop, output settings and readings.

With complete protection functions, the high voltage power supplies can deal with overvoltage, overcurrent, load discharge and other situations.

## Features

- Can be used as a HV DC power supply or as HV capacitor charging power supply.
- Output voltage adjustable from 0 to 100%
- Output power: Average charging @ 3KJ/S and the peak charging power can reach 6KW.
- Charging in constant current mode and switch to constant current mode till fully charged.
- Unique double isolated system, strong anti-interference ability.
- Forced air cooling, very rugged design.

## Applications

- Ion beam implantation
- Semiconductor process

- Electron beam welding
- Capacitor charging
- High-power RF transmitter
- Electrostatic precipitator
- X-ray system

## Remote functions

- 0 ~ 10V analog signal control (DB50 interface <6U>)
- RS communication interface (RS485 communication port)

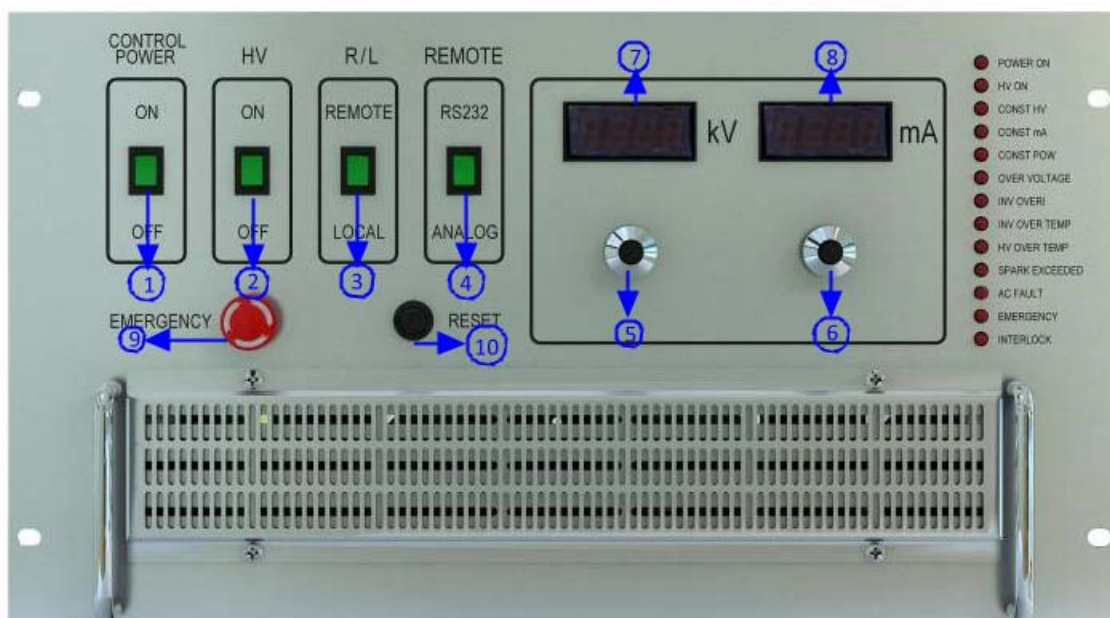
## Specifications

<b>Input</b>	Voltage	Three-phase 380Vac (input tolerance: 10%)	
	Frequency	50Hz/60Hz	
	Connection	Input line provided by iDealTek. (1.5 meters)	
<b>Output</b>	Rated power	3KW ~ 6KW (Max.) available **	
	Output voltage adjusting range	1KV / 2KV / 3KV / 4KV / 5KV / 6KV / 8KV / 10KV / 12KV / 15KV / 20KV / 30KV / 40KV / 50KV / 60KV / 70KV / 80KV / 100KV available ** (For other output voltages, please contact us for details)	
	Output current adjusting range	0A ~ ****mA	
	Output polarity	Positive or Negative (both available) Client must choose one output polarity before ordering.	
	Line regulation	≤0.1% for ±10% change in input voltage.	
	Load regulation	≤0.1% for no load to full load at output.	
	Ripple (Vr.m.s.)	≤0.1% @ rated output.	
	Output connection	Detachable shielded high-voltage cable provided by IdealTek. (3 meters)	
	Efficiency	≥90%	
	Output control	Local	10-turn potentiometer on front panel.
<b>Setting &amp;</b>			

Display	mode	Remote	DB50 analog port & RS485 communication port.
	Display mode	Display mode	4 <sup>1</sup> / <sub>2</sub> LED digital display
		Display resolution	≤1% (range: 5%~100% of the rated value)
Protection & Monitoring functions	Load discharging protection		When the load has discharging due to insufficient safety distance between load and ground, the power supply shutdown the high voltage output, and then restarts, so cycle like this till the discharging fault is eliminated.
	Short circuit protection		When a short circuit occurs between the load and the ground, the power supply works in constant current mode, the current is limited to the maximum value, and the voltage drops to 0 to protect the internal inverter from damage.
	Over current protection		When the users' load exceeds the rated load and cause over-loading, the power supply works in constant current mode, the power supply output current does not change, and output voltage decreases.
Noise			≤65dB
Protection degree			IP20
Cooling method			Forced air cooling (Front inlet, rear outlet)
Working environment conditions	Ambient temperature		0℃ ~ 40℃
	Humidity		10% ~ 90% (non-condensing)
	Height		≤2000m
Storage environment conditions	Ambient temperature		-20℃ ~ 60℃
	Humidity		10% ~ 90%(non-condensing)
	Height		≤2000m
Size (W*H*D) (mm)			483*266*573 (19" sub-rack 6U chassis)
Weight			45KG (1KV ~ 10KV) 55KG (20KV ~ 100KV)
● Note: every power supply has 48 hours full load burn-in test @ 40℃			

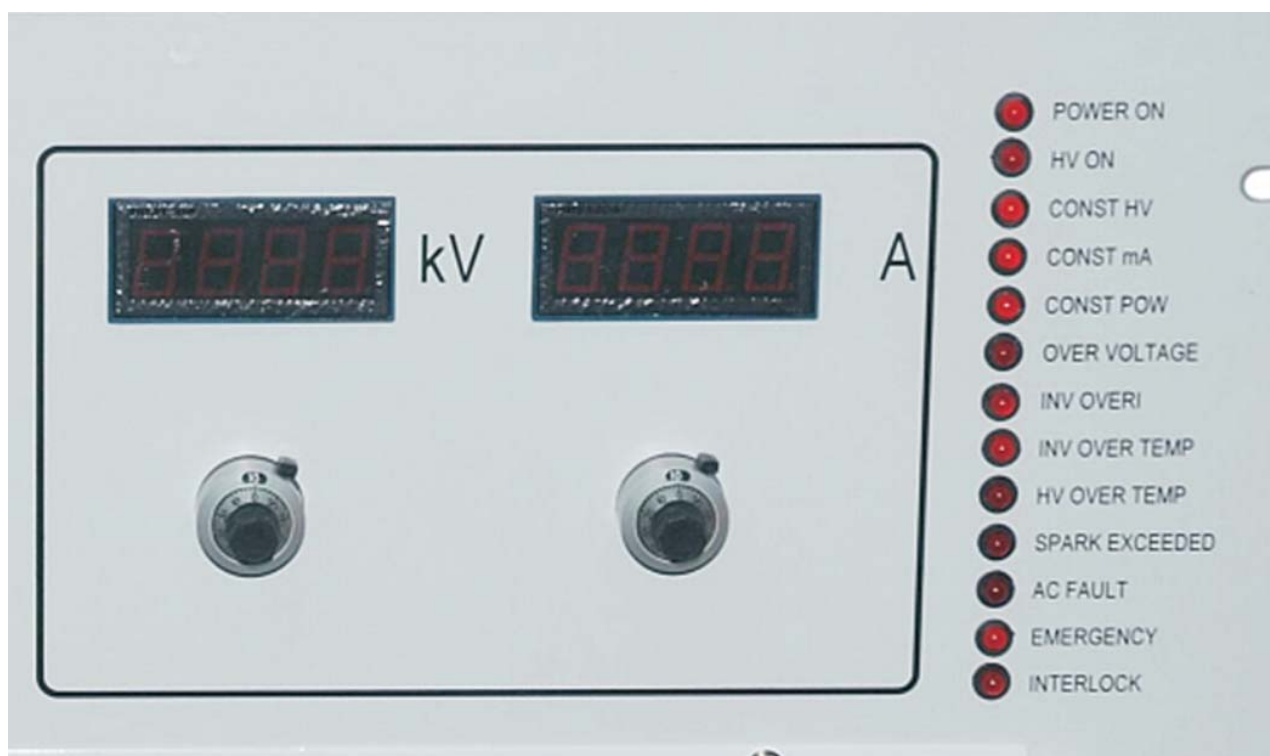
## Power Supply Front and Rear Panels Description

### Front panel description



No.	Description
1	Power Switch (POWER)
2	HV ON / OFF Switch (HV)
3	Local / Remote Switch (LOCAL / REMOTE)
4	Analog / RS communication Switch
5	HV adjusting knob
6	Current adjusting knob
7	HV output display
8	Output current display
9	Emergency Button
10	Reset switch

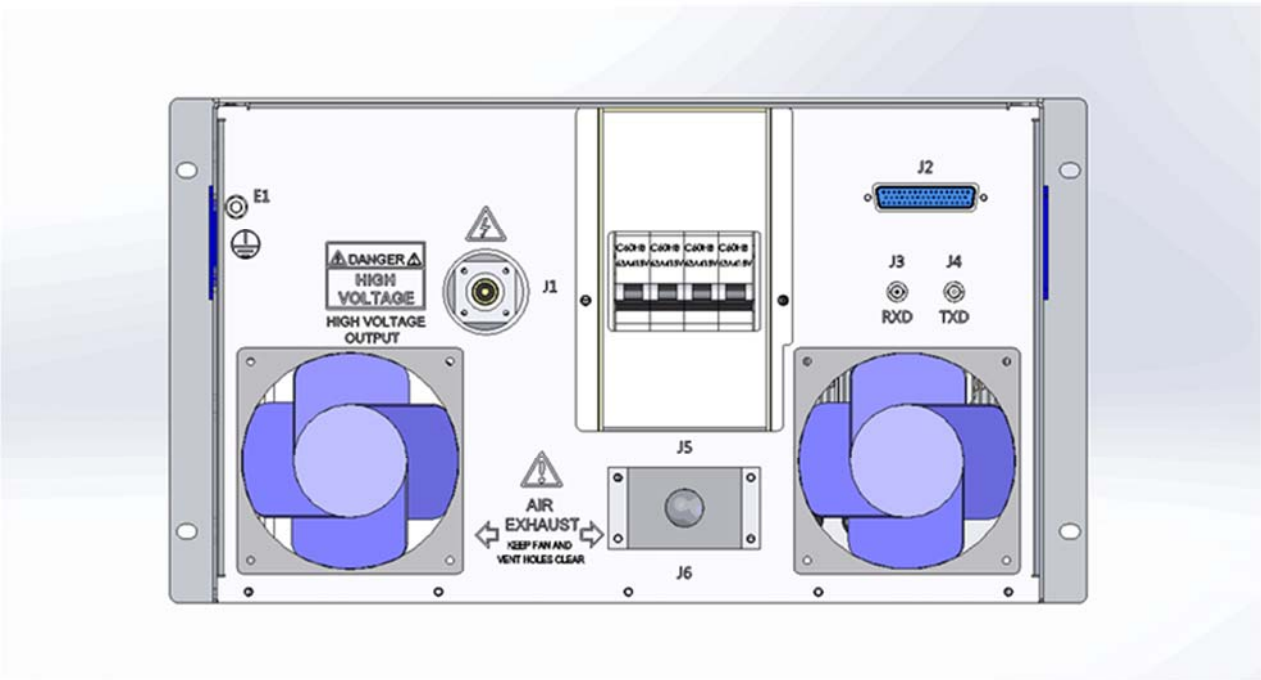
## Front Panel Indicator Lights Description



Indicator lights name	Description
POWER ON	After the CONTROL POWER switch is set to the ON position, the light becomes on, indicating that the power input has been connected and the power supply is normal.
HV ON	After the HV switch is set to the ON position, the light becomes on, indicating that the high-voltage output of the power supply is started and the power supply is normal.
CONST HV	When the light is on, it indicates that the power supply is working in a constant voltage state.
CONST mA	When the light is on, it indicates that the power supply is working in a constant current state.
CONST POW	When the light is on, it indicates that the power supply is working in a constant power state.
OVER VOLTAGE	When the light is on, it indicates that the power supply has a high voltage overvoltage fault.
INV OVERI	This light is on, indicating that the power supply has an inverter overcurrent fault.
INV OVER TEMP	This light is on, indicating that the power supply has an inverter over-temperature fault.
HV OVER TEMP	When the light is on, it indicates that the power supply has an over-temperature fault with the high-voltage part.

SPARK EXCEEDED	When the light is on, it indicates that the power supply has a discharge fault.
AC FAULT	When the light is on, it indicates that there is an AC fault (overvoltage or undervoltage) fault in the power supply.
EMERGENCY	When the light is on, it indicates that the power supply is in an emergency stop state with faults.
INTERLOCK	When the light is on, it indicates that the power supply is in an interlocked state and the power supply is normal.

Rear panel description



Mark	Description
E1	Grounding bolt
J1	HV output interface
J2	DB50 control interface
J3	RS485 Communication port (RXD)
J4	RS485 Communication port (TXD)
J5	Main power switch
J6	Power Supply input interface
	Three – phase, four – wire (L1 → Black, L2 → Red, L3 → Grey, Null → Blue, PE → Green)
AIR EXHAUST	Cooling fans

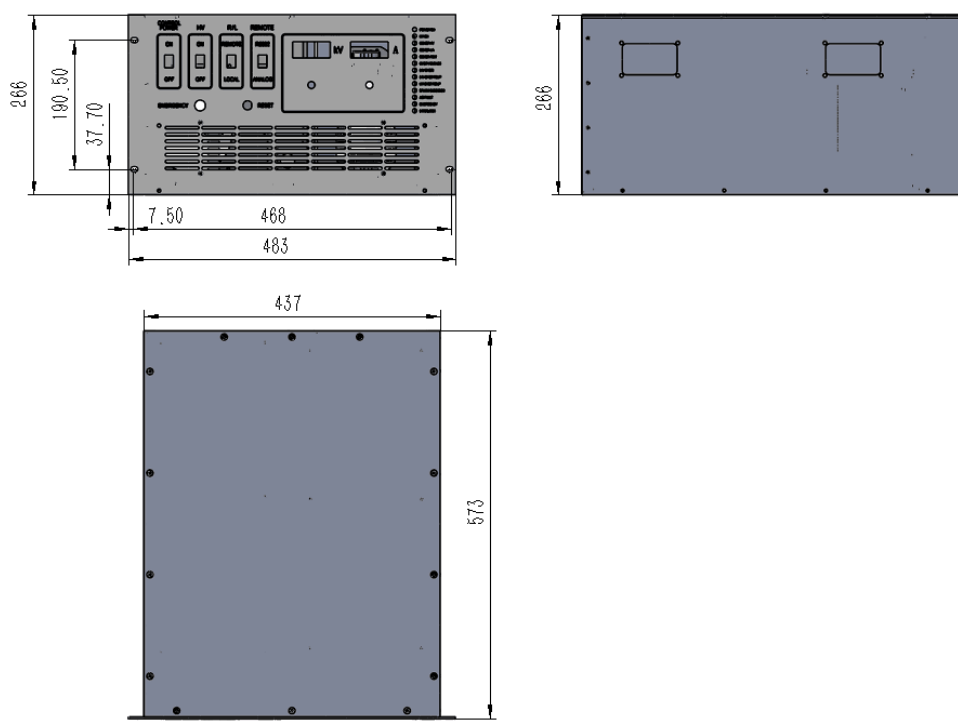
## Standard model list

KV	mA	P (KW)	Model	KV	mA	P (KW)	Model
1	6000	6	CCP-(N/P)6kW-1kV	15	400	6	CCP-(N/P)6kW-15kV
2	3000	6	CCP-(N/P)6kW-2kV	20	300	6	CCP-(N/P)6kW-20kV
3	2000	6	CCP-(N/P)6kW-3kV	30	200	6	CCP-(N/P)6kW-30kV
4	1500	6	CCP-(N/P)6kW-4kV	40	150	6	CCP-(N/P)6kW-40kV
5	1200	6	CCP-(N/P)6kW-5kV	50	120	6	CCP-(N/P)6kW-50kV
6	1000	6	CCP-(N/P)6kW-6kV	60	100	6	CCP-(N/P)6kW-60kV
8	750	6	CCP-(N/P)6kW-8kV	70	86	6	CCP-(N/P)6kW-70kV
10	600	6	CCP-(N/P)6kW-10kV	80	75	6	CCP-(N/P)6kW-80kV
12	500	6	CCP-(N/P)6kW-12kV	100	60	6	CCP-(N/P)6kW-100kV

More models are coming soon. 😊

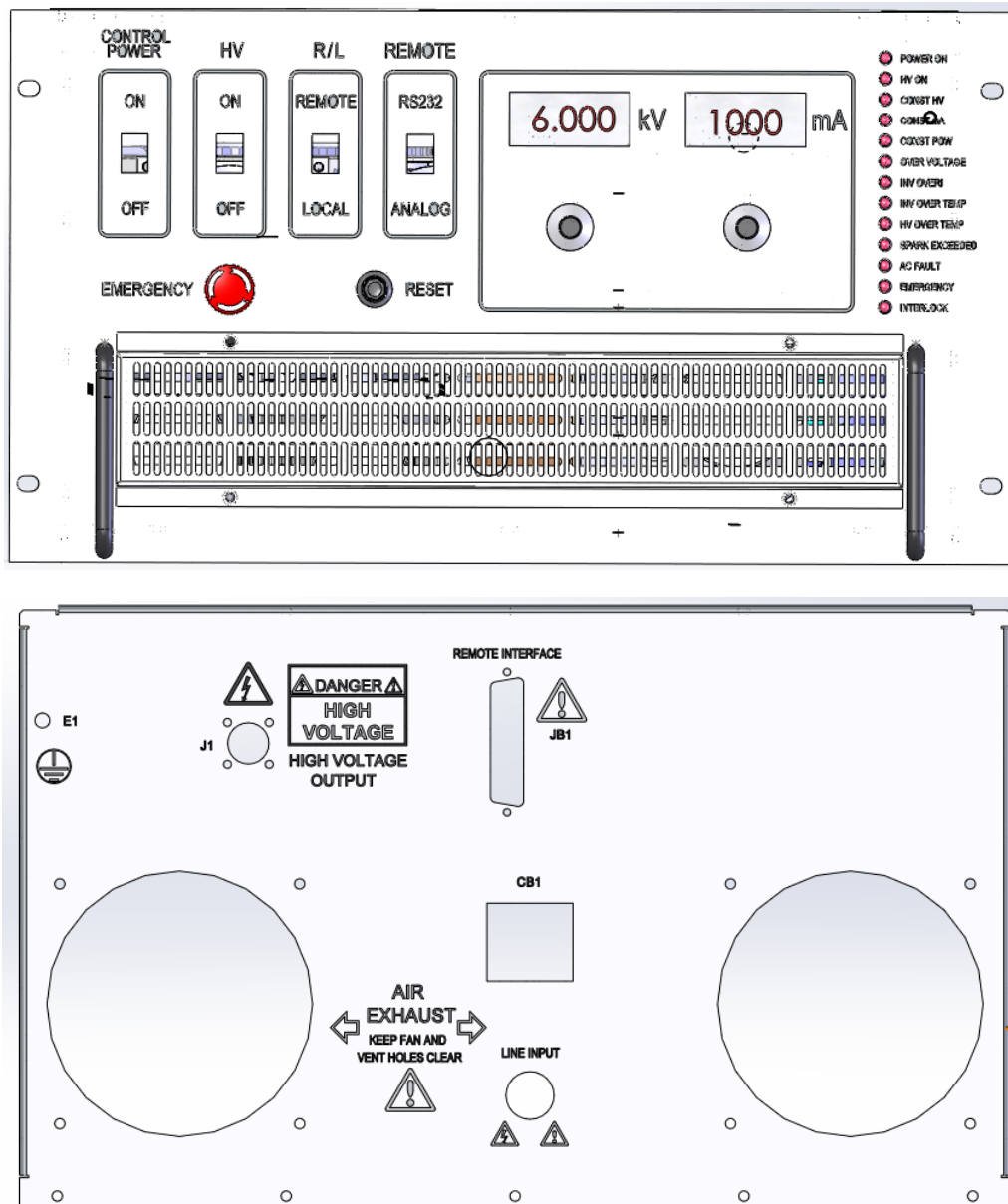
Drawings (for reference only)

6U chassis ((2KW<P≤6KW)) (RAL7035)





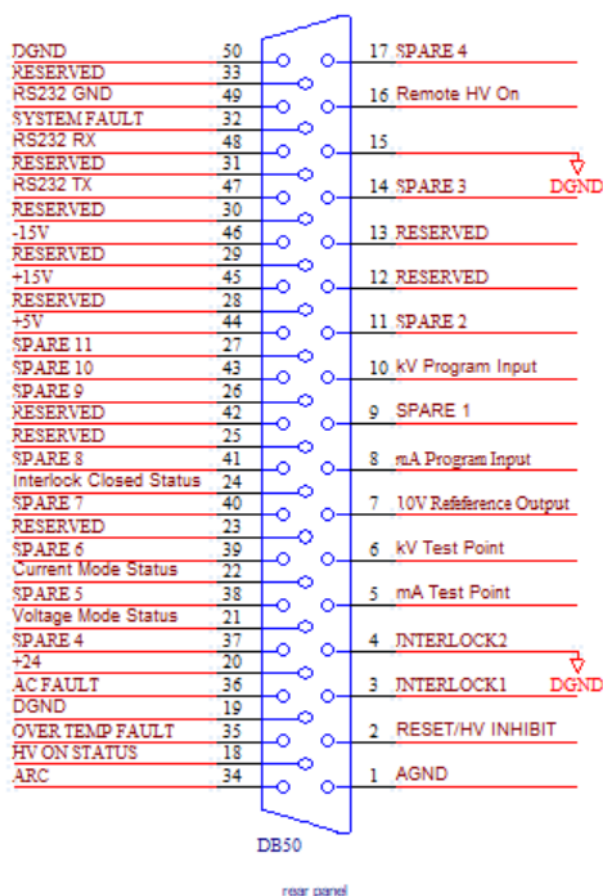




## Safety caution

1. This power supply has HV output, only professional person could operate it.
2. Please make sure of good grounding before operation.
3. Capacitor charging power supply has low internal stored energy, please NO no-loading working.
4. Keep power supply clean and good ventilation.
5. HV input & output connectors or HV load no touch anything.

## Remote DB50 port drawing and definition



**HV can be enabled only when JB1 – 3 and JB1 – 4 are closed.**

1	AGND	AGND
2	Reset/HV Inhibit	Normally open, Low = Reset/Inhibit
3	External Interlock	+24Vdc @ open, <25mA @ closed
4	External Interlock Return	Return for External Interlock
5	mA Test Point	0-10Vdc = 0-100% rated output, Zout= 1KΩ, 1%
6	kV Test Point	0-10Vdc = 0-100% rated output, Zout= 1KΩ, 1%
7	+10Vdc Reference Output	+10Vdc @ 1mA
8	mA Program Input	0-10Vdc = 0-100% rated output, Zin>10MΩ
9	Spare	
10	kV Program Input	0-10Vdc = 0-100% rated output, Zin>10MΩ
11	Spare	
12	Reserved	
13	Reserved	
14	Spare	
15	Power Supply Common	Power Supply Ground
16	Remote HV On	Open circuit is +24Vdc Closed to 2A peak, 1Adc

		Connect to pin 15 at any time to turn on the high voltage.
<b>17</b>	Spare	
<b>18</b>	HV On Indicator	+24Vdc @ 25mA = HV ON
<b>19</b>	Power Supply Common	Supply Ground
<b>20</b>	+24Vdc Output	+24Vdc @ 100mA, maximum
<b>21</b>	Voltage Mode Status	Open Collector, Low = Active
<b>22</b>	Current Mode Status	Open Collector, Low = Active
<b>23</b>	Reserved	
<b>24</b>	Interlock Closed Status	Open Collector, Low = Active
<b>25</b>	Reserved	
<b>26</b>	Spare	
<b>27</b>	Spare	
<b>28</b>	Reserved	
<b>29</b>	Reserved	
<b>30</b>	Reserved	
<b>31</b>	Reserved	
<b>32</b>	Reserved	
<b>33</b>	Reserved	
<b>34</b>	Arc	Open Collector, Low = Active
<b>35</b>	Over Temp Fault	Open Collector, Low = Active
<b>36</b>	AC Fault	Open Collector, Low = Active
<b>37</b>	Spare	
<b>38</b>	Spare	
<b>39</b>	Spare	
<b>40</b>	Spare	
<b>41</b>	Spare	
<b>42</b>	Spare	
<b>43</b>	Spare	
<b>44</b>	+5Vdc Output	+5Vdc @ 100mA, maximum
<b>45</b>	+15Vdc Output	+15Vdc @ 100mA, maximum
<b>46</b>	-15Vdc Output	-15Vdc @ 10mA, maximum
<b>47</b>	RS232 Tx	
<b>48</b>	RS232 Rx	
<b>49</b>	RS232 GND	
<b>50</b>	Power Supply Common	Power Supply Ground