


REVISIONS			
REV	DESCRIPTION	DATE	APPROVAL
A	RELEASE	05/14/03	FF

**INSTRUCTION MANUAL**  
 for  
**BP2592 Series**  
**Bipolar High Voltage Power Supply**

CUSTOMER	CONTRACT NO.				7313 SW TECH CENTER DRIVE PORTLAND, OR 97223 USA PH: (503) 598-9595 FAX: (503) 682-8164 WWW.CPSHV.COM	
	PREPARED F Feng	DATE 05/14/03				
	CHECKED	DATE	SIZE <b>A</b>	FSCM NO. <b>31640</b>	SPECIFICATION NO. BP2592-89-0001	REV <b>A</b>
	APPROVED	DATE	SCALE 1:1		SHEET 1 OF 1	
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## 1. Safety:

### **OPERATIONAL SAFETY**

THIS POWER SUPPLY GENERATES VOLTAGES THAT ARE DANGEROUS AND MAY BE FATAL. OBSERVE EXTREME CAUTION WHEN WORKING WITH THIS EQUIPMENT.

High voltage power supplies must always be grounded.

Do not touch connections unless equipment is off and the capacitances of both the load and power supply are discharged.

Do not ground yourself or work under wet or damp conditions.

### **SERVICING SAFETY**

Maintenance may require removing the instrument cover with the power on.

Servicing should only be done by qualified personnel aware of the electrical hazards.

“WARNING” notes in the text call attention to hazards in the operation of these units that could lead to possible injury or death.

“CAUTION” notes in the text indicate procedures to be followed to avoid possible damage to equipment.

Technical and safety assistance can be obtained from:

	Frank Feng
	7313 SW Tech Center Dr
	Portland, OR 97224, USA
Phone:	503-598 9595
Fax:	503-684-8164
e-mail:	<a href="mailto:frank@cpsvh.com">frank@cpsvh.com</a>

### **WARNING**

IF THE EQUIPMENT IS USED IN ANY MANNER NOT SPECIFIED BY THE CPS, INC. (MANUFACTURER), THE PROTECTION PROVIDED IN THE POWER SUPPLY MAY BE IMPAIRED CAUSING EQUIPMENT DAMAGE.

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## 2. Definitions of Symbols



Direct Current



Protective Conductor Terminal



Caution (refer to accompanying documents)



Caution, risk of electric shock

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### 3. Introduction:

CPS Model BP2592 sets the standard for high performance in modular high voltage power supplies. Standard configuration is a  $\pm 30$  kV version. Polarity is selected via a switch on the front panel.

The CPS Model BP2592 series of power supplies is designed for electro static applications requiring occasional output voltage reversal.

The unit is designed to safely withstand continuous short circuits without damage.

### 4. Features:

Wide output voltage range.

Output voltage polarity reversal on the fly.

Three HV output connectors.

Output voltage softening resistors.

Voltage programming via panel mount potentiometer.

Voltage metering front panel digital display.

### 5. Electrical Specifications:

*Output Polarity:* Positive or negative, reversible by user.

*Output Voltage:* -30kV to +30kVDC (programmable).

*Output Current:* 300 $\mu$ A rated.

*Output Ripple:* 0.1% peak to peak of output voltage.

*Load Regulation:* Better than 2% of full voltage from a no load to full load change

*Line regulation:*  $\pm 0.01\%$ .

*Long term stability:* 0.01% per hour, after 1/2 hour warm up.

*Temperature Coefficient:* 100ppm/ $^{\circ}$ C.

*Programming:* via potentiometer mounted on the front panel.

*Output Protection:* Short circuit and arc protected. Output voltage is self-restoring after short removal.

*Voltage monitor:* via digital display on the front panel.

*Operating temperature:* 0 to 50 $^{\circ}$ C.

*Input voltage:* 115VAC (230VAC optional)

*Input current:* 300 mA max.

*Internal Fuse:* 250V, 1.6A.

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**WARNING**

Replacement of internal fuse must be performed by qualified personnel. Contact manufacturer for instructions.

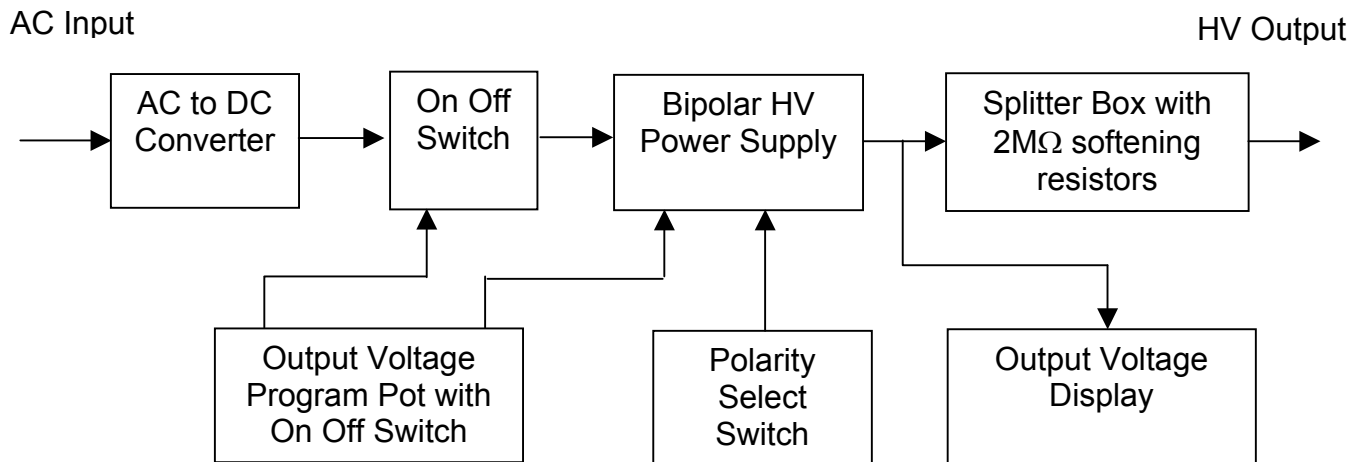
**6. Block Diagram:**

Fig. 1. Block diagram of BP2592 high voltage power supply

**7. Environmental Conditions:**

Model BP2592 must operate under following conditions:

- the equipment is intended for indoor use only;
- operating temperature 0 to 50<sup>0</sup>C;
- altitude up to 1000 m;
- maximum relative humidity 80% at 31<sup>0</sup>C and 50% at 40<sup>0</sup>C
- installation Category - Intended for use in installation category (overvoltage category) II (IEC 1010-1 standard).
- Pollution Degree - Category 2 (IEC 1010-1 standard)

**8. Mechanical Specifications:**

*Output mating connector:*

CPS part number 1314-06-0001 with screened cable

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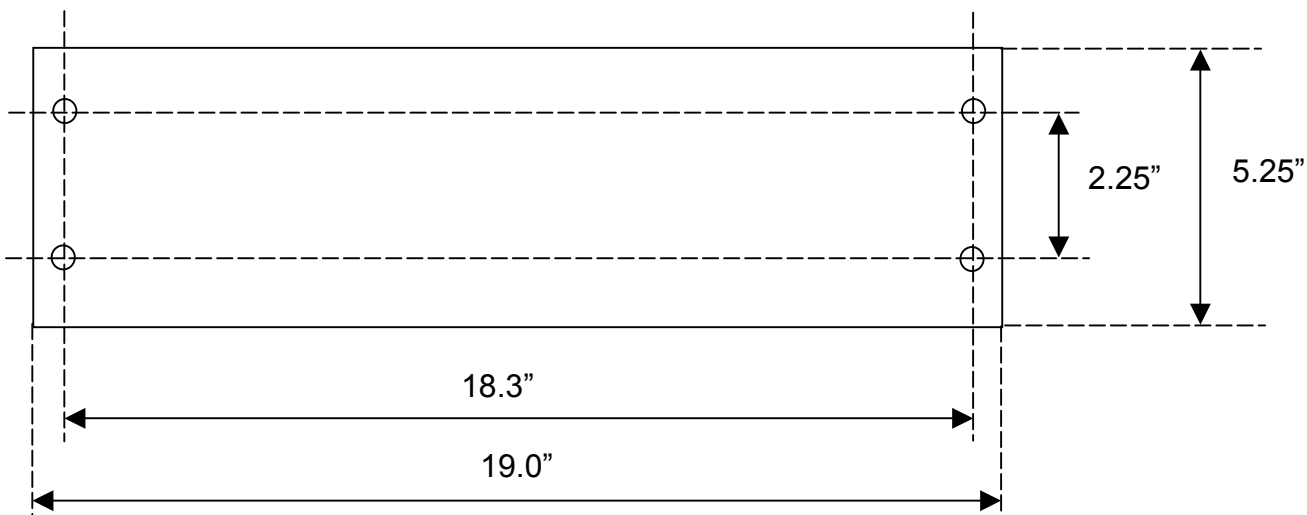


Fig. 2. Physical layout



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## 9. Operation:

### **WARNING**

THIS EQUIPMENT GENERATES DANGEROUS VOLTAGES THAT MAY BE FATAL. PROPER GROUNDING OF ALL HIGH VOLTAGE EQUIPMENT IS ESSENTIAL.

### **WARNING**

THIS EQUIPMENT IS PERMANENTLY CONNECTED THEREFORE IT SHALL OPERATE IN BUILDINGS WITH A SWITCH OR CIRCUIT BREAKER. THIS EQUIPMENT MUST BE INSTALLED IN CLOSE PROXIMITY OF THE SWITCH OR CIRCUIT BREAKER WITHIN EASY REACH OF OPERATOR. THIS SWITCH OR CIRCUIT BREAKER SHALL BE MARKED AS THE DISCONNECTING DEVICE FOR THE POWER SUPPLY.

### **CAUTION**

BEFORE CONNECTING THE POWER SUPPLY TO THE AC SUPPLY, FOLLOW THIS STEP-BY-STEP PROCEDURE.

FAILURE TO FOLLOW THESE PROCEDURES MAY VOID THE WARRANTY AND WILL RESULT IN SAFETY VIOLATION.

#### Step 1

Turn the power switch at the rear of the power supply to off (0) position.

#### Step 2

Attach the AC power cord to the power supply and plug the other end to the wall socket.

#### Step 3

Attach the high voltage output cable to the load. The cable used should be shielded with a wire braid that functions as the high voltage return. Make sure sufficient clearance and creepage exists from the live conductor of the cable to high voltage return.

#### Step 4

Attach the mating plug on the high voltage cable to the HV output receptacle on the supply and hand tighten. Make absolutely sure that a good high voltage output and high voltage return connection is made between the supply and the load.

#### Step 5

The chassis of the high voltage power supply and high voltage cable shield must be solidly grounded through AC power cord. Check chassis to ground and shield to ground with an Ohmmeter to ensure reliable grounding.





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### Step 6

For initial turn-on, adjust the programming potentiometer to counter clockwise position until after the potentiometer driven switch clicks. At that position, Bipolar HV Power Supply DC input is off and programmed output high voltage is at 0V.

### Step 7

Turn on the AC input switch located at the rear of the power supply.

### Step 8

Turn the potentiometer clockwise slowly. When the potentiometer driven switch clicks, red LED should be lit, indicating power to the Bipolar HV Power Supply is on.

### Step 9

Digital display panel indicates actual output voltage when the red LED is on.

Turn the potentiometer clockwise slowly, output voltage increases as indicated by the output voltage digital display panel.

Note the potentiometer has 300 degree rotation to change output voltage from 0V to an absolute value of 30kV (full scale)

### Step 10

To change polarity of the output voltage without changing the absolute value, use polarity select switch. Output voltage will reduce gradually then ramp to the voltage of the opposite polarity.

### Step 11

To switch off the high voltage power supply, turn the potentiometer to full counter clockwise position until the red LED on front panel is off. Switch off AC power switch at the rear of the power supply.

### **WARNING**

AFTER SWITCHING OFF, DO NOT HANDLE THE LOAD UNTIL THE POWER SUPPLY AND LOAD CAPACITANCES HAVE BEEN DISCHARGED.

### **WARNING**

The digital display of the power supply does not read the output voltage when the AC power supply is disconnected or potentiometer switch is at off position, even if a high voltage charge still exists across the load.

### **WARNING**

Three HV outputs are internally connected in parallel. They are either on or off together.



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### WARNING

Always operate the unit with the cover on. Do not attempt to access or repair any internal circuits. Dangerous and potentially lethal voltages are generated inside the module.

#### 10. Warranty:

COMPUTER POWER SUPPLY, Inc. (CPS) warrants equipment of its manufacture against defective materials or workmanship for a period of one year from the date of shipment.

CPS will repair or replace any defective product, which was not damaged by negligence, misuse, improper installation, accident, unauthorized repair or alteration by the Buyer.

This warranty is applicable to the original Buyer only and constitutes the sole and exclusive warranty of the Seller. No other warranty is made, expressed or implied.