

INSTRUCTION MANUAL

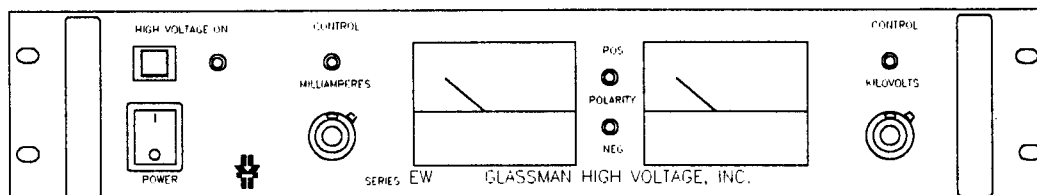
EW SERIES



SERIAL #: **N118138-01**

MODEL: **PS/EW50P12.0Y17**

DATE: **1-26-05**



Innovations in high voltage power supply technology.

GLASSMAN HIGH VOLTAGE INC.

124 West Main Street, PO Box 317

High Bridge, NJ 08829

(908) 638-3800 * FAX (908) 638-3700 * www.GlassmanHV.com



New US Headquarters Location!

Effective November 13, 2000, our new High Bridge, NJ address, telephone and fax numbers are as follows:

Address: Glassman High Voltage, Inc.
P.O. Box 317
124 West Main Street
High Bridge, New Jersey 08829-0317

Phone: 908-638-3800

Fax: 908-638-3700

Email: Support@GlassmanHV.com

Internet: www.GlassmanHV.com

Please disregard our Whitehouse Station, NJ address, phone and fax numbers wherever they appear on documentation and/or identification labeling.

* Note: Our e-mail and internet addresses have not changed.

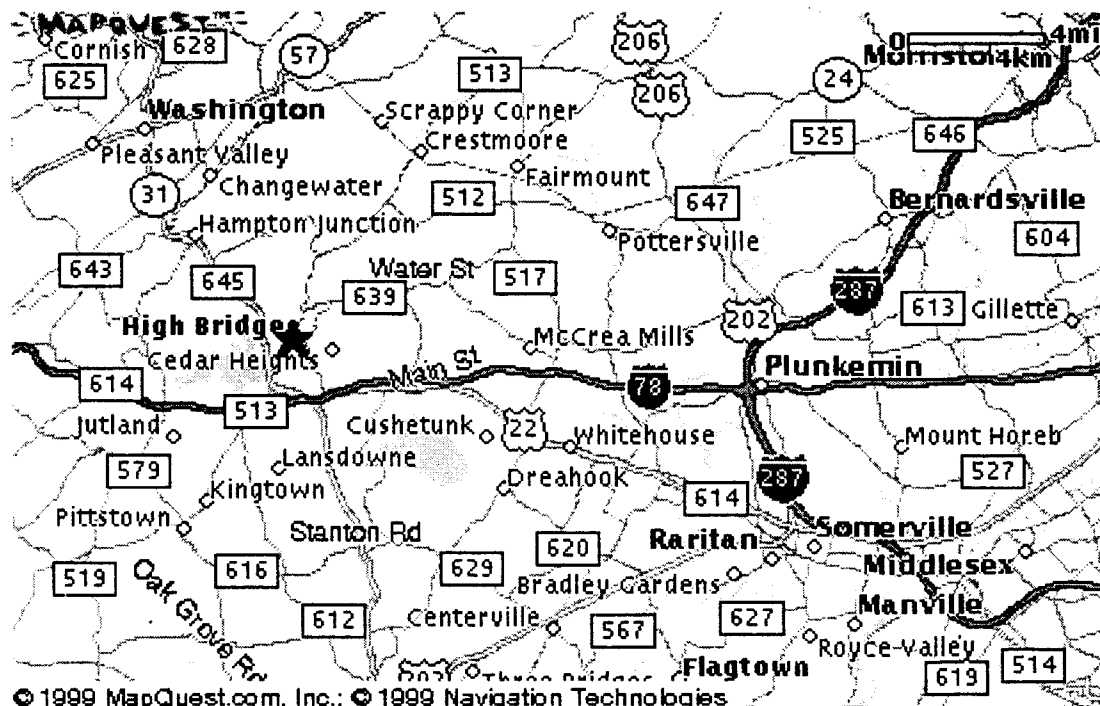




TABLE OF CONTENTS

EW SERIES

	Page
Warranty/User Registration Card	i
SECTION I. DATA SHEETS	1
Features	1a
Specifications, Models and Outline	1b
CE Declaration of Conformity (if applicable)	
EMC Directive Addendum (if applicable)	
Specification Control(s) (if applicable)	
SECTION II. GENERAL INFORMATION	2
Unpacking and Inspection	2
Correspondence	2
Safety	3
Connections/Controls Description	4
Installation and Operation	7
Polarity Reversal - Models greater than 5kV	9
Polarity Reversal - Models 5kV or less	10
Remote Control Interface	11
SECTION III. SCHEMATIC AND ASSEMBLY DRAWINGS	

LIMITED WARRANTY

Glassman High Voltage, Inc. ("Glassman") provides a limited warranty in lieu of all other warranties. Buyer's exclusive remedies in the event of a defect are limited to repair, replacement, or at Glassman's discretion, refund of the purchase price. The terms of the limited warranty and the Buyer's remedies are described below.

Glassman warrants its standard power supplies to be free from defect in material and workmanship, and Glassman agrees to repair or replace any power supply which fails to perform in accordance with Glassman's written specifications within three years after date of shipment from Glassman. OEM and modified standard power supplies are warranted to be free from defect in materials and workmanship for one year from date of shipment from Glassman.

This limited warranty shall not apply to any power supply which has been:

- (1) Repaired, worked on or altered by persons unauthorized by Glassman which, in Glassman's sole judgement, adversely affects the performance, stability or reliability of the power supply.
- (2) Subject to misuse, negligence or accident; or
- (3) Connected, installed, adjusted or used otherwise than in accordance with instructions furnished by Glassman.

Glassman reserves the right to make any changes in design or construction of its power supply at any time, without incurring any obligation to make any change whatsoever in units previously delivered.

LIMITATION ON REMEDIES. Buyer's exclusive remedy in the event of a defect in a power supply is limited to the repair or replacement of any defective power supply or to refund of the purchase price at Glassman's sole discretion. Buyer must return the power supply to the Glassman factory, transportation prepaid by the Buyer, within the warranty period for the warranty claim to be effective. **Glassman is not liable to Buyer or to any third party for consequential or incidental damages** under any circumstances, whether due to defect in the power supply, due to delay or failure of delivery, due to a failure of the power supply to perform as specified or for any other reason or cause. Buyer and Glassman agree that Buyer's sole remedy and Glassman's sole liability to Buyer is limited to repair, replacement or refund of the purchase price of the power supply as described herein, whether Buyer's claim arises out of contract or in tort.

DISCLAIMER OF IMPLIED WARRANTIES. This limited warranty excludes all other warranties and is offered and accepted in lieu of any and all other warranties, whether express or implied, including without limitation the implied warranties of merchantability and fitness for a particular purpose.

The entire contract concerning warranty rights and obligations and concerning Buyer's remedies is embodied in this writing. This writing constitutes the final expression of the parties' agreement, and it is a complete and exclusive statement of the terms of that agreement. No statements or understanding, purporting to modify or vary the terms hereof, shall be binding and cannot be relied upon by Buyer.

CE Check the specs... and compare

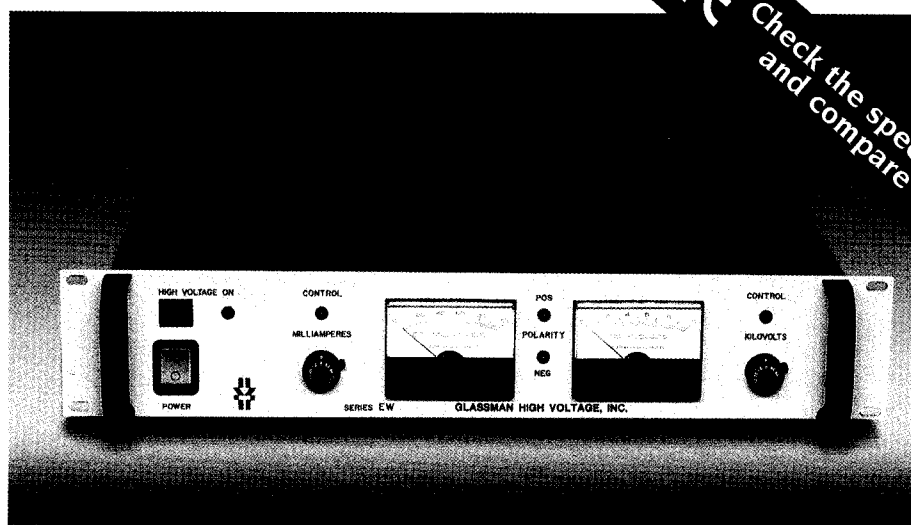
EW Series Extended Current* 500 Watt Regulated High Voltage DC Power Supplies

Up to 60kV...
3.5 Inch
Panel Height
Less than
18 pounds

Laboratory
Performance

Enhanced
Features

Fully compliant with the European harmonized EMI directive, EN50082-2, and with the low voltage (safety) directive, 73/23/EEC.



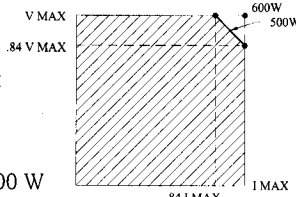
Models from 0 to 1 kV through 0 to 60 kV

The EW Series is a 500 watt regulated high voltage DC power supply with an important difference...maximum current ratings are equivalent to a 600 W supply! This maximum current, which is available for all output voltages up to 84% of rated voltage, should be of significant interest for many applications. The EW is offered with dual analog voltage and current meters or, optionally, with dual digital meters or a blank panel for OEM/systems applications.

Features:

***Extended Current.** EW Series models have maximum current ratings that are equivalent to a 600 W supply. These currents are available up to 84% of rated output voltage.

Above this point, current is linearly derated to maintain a constant 500 W maximum output.



Pulse-Width Modulation. Off-the-line pulse-width modulation provides high efficiency and a reduced parts count for improved reliability.

Air Insulated. The EW Series features "air" as the primary dielectric medium. No oil or encapsulation is used to impede serviceability or increase weight.

Constant Voltage/Constant Current Operation. Automatic crossover from constant-voltage to constant-current regulation provides protection against overloads, arcs, and short circuits.

Low Ripple. Ripple is typically less than 0.02% of rated voltage at full load.

Tight Regulation. Voltage regulation is better than 0.005% for allowable line and load variations. Current regulation is better than 0.5% from short circuit to rated voltage.

Front Panel Controls (Analog and Digital Versions.) Separate 10-turn controls with locking vernier dials are used to set voltage and current levels. A high voltage enable switch and an AC power on/off switch complete the panel controls. L.E.D.'s indicate when high voltage is on, the output polarity, and whether the supply is operating in a voltage or current regulating mode. For the blank panel version, only a power on/off switch is provided on the panel.

Remote Control Facilities. As standard, all EW Series supplies output voltage and current program/monitor terminals, TTL high voltage enable/disable, safety interlock terminals, and a + 10 volt reference source.

Small Size and Weight. EW Series power supplies occupy only 3.5 inches of panel height. Net weight is less than 18 pounds.

Warranty. Standard power supplies are warranted for three years; OEM and modified power supplies are warranted for one year. A formal warranty statement is available.



Designing Solutions for High Voltage Power Supply Applications

GLASSMAN HIGH VOLTAGE INC.

124 West Main Street, PO Box 317, High Bridge, NJ 08829-0317
(908) 638-3800 • Fax (908) 638-3700 • www.glassmanhv.com

GLASSMAN EUROPE Limited (UK)
+44 1256 883007 FAX +44 1256 883017
E-mail: Glassman_europe@glassmanhv.com

GLASSMAN JAPAN High Voltage Limited
+81 45 902 9988 FAX +81 45 902 2268
E-mail: Glassman_japan@glassmanhv.com

Specifications

(From 5% to 100% rated voltage. All units operate down to zero output with very slight degradation of performance.)

Input: 102-132 V RMS, single-phase, 48-63 Hz, <10A. Connector per IEC 320 with mating line cord, terminated with NEMA 5-15 plug.

Efficiency: Typically 85% at full load.

Output: Continuous, stable adjustment, from 0 to rated voltage or current by panel mounted 10-turn potentiometers with 0.05% resolution, or by external 0 to 10V signals is provided. Linearity is < 1% of rated. Voltage accuracy is 0.5% of setting, 0.2% of rated. Repeatability is <0.1% of rated.

Stored Energy: <1.5 Joules, 20 kV; <4 Joules, 60 kV.

Voltage Regulation: Better than 0.005% for specified line variations and 0.005% + 1 mV/mA for load variations.

Ripple: <0.02% of rated voltage + 0.5 V RMS at full load.

Current Regulation: Better than 0.1% from short circuit to rated voltage at any load condition.

Voltage Monitor: 0 to + 10 V equivalent to 0 to rated voltage. Accuracy, 0.5% reading + 0.2% rated.

Current Monitor: 0 to + 10 V equivalent to 0 to rated current. Accuracy, 1% reading + 0.05% rated for single polarity, 1% reading + 0.1% rated for reversible polarity.

Stability: 0.01% per hour after 1/2 hour warmup, 0.05% per 8 hours.

Voltage Rise/Decay Time Constant: 50 ms typical with a 30% resistive load using either HV on/off or remote programming control.

Temperature Coefficient: 0.01% per degree C.

Ambient Temperature:
-20 to +40 degree C, operating;
-40 to +85 degree C, storage.

Polarity: Available with either positive, negative, or reversible polarity with respect to chassis ground.

Protection: Automatic current regulation protects against all overloads, including arcs and shorts. Fuses, surge-limiting resistors, and low energy components provide ultimate protection.

Remote Controls: Terminal block is provided for all remote functions, including common, +10 V reference, interlock, voltage and current program/monitor, TTL, ground, and local control, provided on a rear panel terminal block.

External Interlock: Open off, closed on. Normally latching except for blank panel version where it is non-latching.

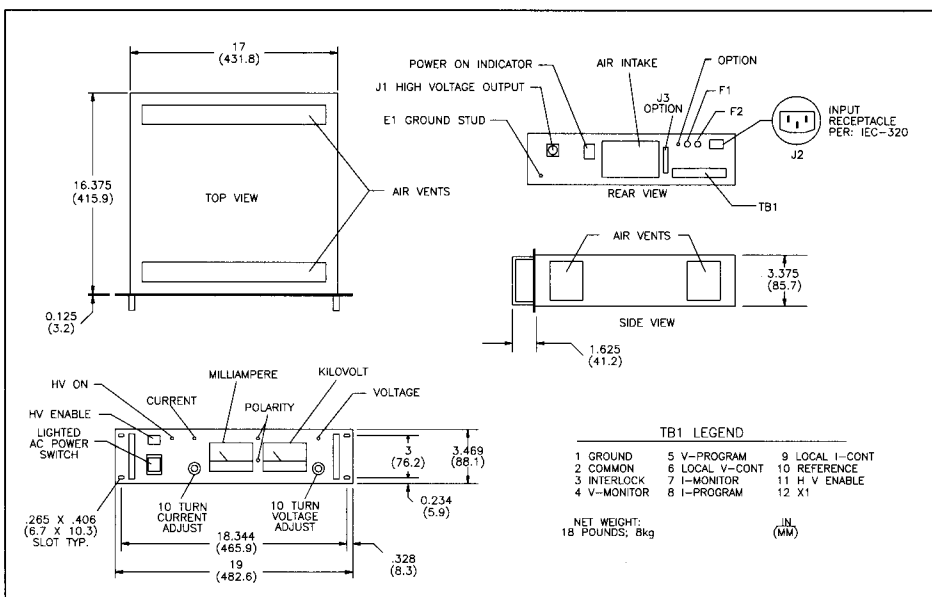
HV Enable/Disable: 0-1.5 V off, 2.5-15 V on.

Options

Symbol	Description
100	90-116 V input, 48-63 Hz. NEMA 5-15 plug.
200	180-232 V input, 48-63 Hz. NEMA 6-15 plug.
220	200-264 V input, 48-63 Hz. NEMA 6-15 plug.
400	48-420 Hz input.
DM	3-1/2 digit LCD panel meters.
NC	Blank front panel, power switch only.
CT	Current trip. Power supply trips off when the load current reaches the programmed level. This option has a rear panel switch that selects either "trip" operation or current limiting.
ZR	Zero start interlock. Voltage control, local or remote, must be at zero before accepting an enable signal.
SS	Slow start ramp. Specify standard times of 1, 2, 3, 5, 10, 15, 20, or 30s +/- 20%
5VC	0-5 V voltage and current program/monitor.
GE9	RS-232 control and monitor.

Models

Positive Polarity	Negative Polarity	Reversible Polarity	Output Voltage (kV)	Output Current (mA)	Output Cable	Panel Height (in)
Reversible only			EW1R600	0-1	RG-59	3.5
			EW1.5R400	0-1.5	RG-59	3.5
			EW2R300	0-2	RG-59	3.5
			EW3R200	0-3	RG-59	3.5
			EW5R120	0-5	RG-59	3.5
EW7P85	EW7N85	EW7R85	0-7	0-85	RG-8U	3.5
EW10P60	EW10N60	EW10R60	0-10	0-60	RG-8U	3.5
EW15P40	EW15N40	EW15R40	0-15	0-40	RG-8U	3.5
EW20P30	EW20N30	EW20R30	0-20	0-30	RG8U	3.5
EW25P24	EW25N24	EW25R24	0-25	0-24	RG-8U	3.5
EW30P20	EW30N20	EW30R20	0-30	0-20	RG-8U	3.5
EW40P15	EW40N15	EW40R15	0-40	0-15	RG-8U	3.5
EW50P12	EW50N12	EW50R12	0-50	0-12	RG-8U	3.5
EW60P10	EW60N10	EW60R10	0-60	0-10	RG-8U	3.5



Designing Solutions for High Voltage Power Supply Applications

GLASSMAN HIGH VOLTAGE INC.

124 West Main Street, PO Box 317, High Bridge, NJ 08829-0317
(908) 638-3800 • Fax (908) 638-3700 • www.glassmanhv.com



EMC Directive Addendum

For Models: EH, EW, KL, LT, LX, WK, & WX.

Your high voltage power supply has been designed and tested to ensure compliance with the European Community's EMC directives, when used as described in the instruction manual. However, as we do not supply as standard a remote interface cable, in order to ensure continued compliance with EMC directive radiated emissions requirements as specified in harmonized standards,

EN55011 Group 1, Class A for models KL, LT, LX & WX, or

EN55011 Group 1, Class B for models EH, EW & WK,

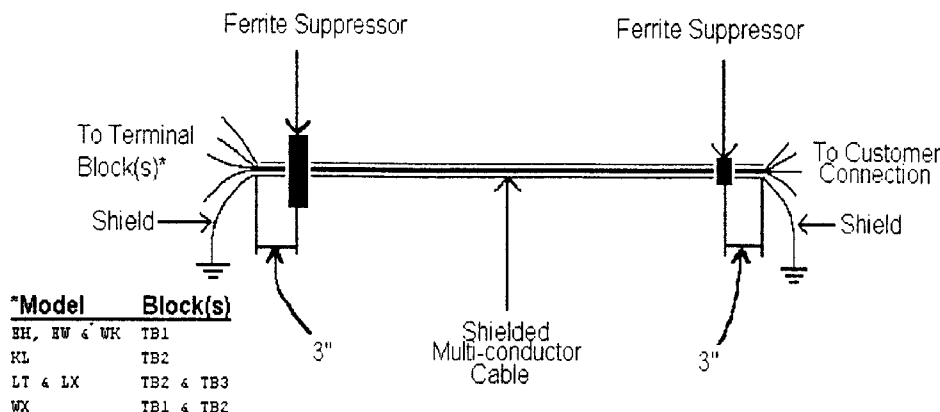
the following precautions must be followed:

1. The interface cable must be of a shielded type with the shield terminated at both ends to an adequate ground source. At the power supply end, the ground terminal of the standard customer interface terminal block(s) or connector can be used to make the ground connection (see drawing below).
2. A ferrite suppressor must be placed at each end of the cable over the shield. These suppressors must be located within 3" of the terminations of each end of the cable (see drawing below). The ferrite suppressors should have the following properties:
 - a) Power supply end - Impedance should be greater than 2,000 ohms at 100MHz .
 - b) Source end - Impedance should be greater than 200 ohms at 100MHz.

For your convenience, we have made available a kit that contains the required ferrite suppressors and assembly instructions. Contact your Glassman representative for further information.

If your power supply is a modified standard, and contains any additional interface connectors, each additional interface cable must follow the same precautions as stated above

If your power supply has the Digital Meter (DM) option, please note that if the meters are subjected to radiated EM fields in excess of 3V/m, the display value may read incorrectly. (Note: **KL Series** digital meters may also read incorrectly if the AC input line is subjected to **conducted** RF in excess 3VRMS). However, the actual HV output remains stable and the true HV output level can be read from the Voltage Monitor.





Declaration of Conformity

Declaration of Conformity
according to EMC Directive 89/336/EEC

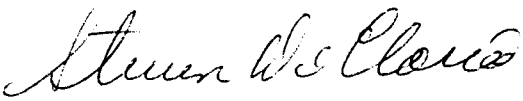
Manufacturers Name: Glassman High Voltage, Inc.
Manufacturers Address: PO Box 317
124 West main Street
High Bridge, NJ 08829
USA

Manufacturer declares that the **EW Series** Power Supplies
conform to the following Product Specifications:

EMC: EN 55011 class B EN 61000-4-2 - 4kV CD, 8kV AD
ENV 50140 - 10V/m IEC 801-4 - 1kV Signal Cable, 2kV AC Mains
PREN 50082-2 DATED 1994

Means Of Conformity: The product herewith complies with the requirements of the EMC Directive
89/336/EEC based on the use of a Technical Construction File (TCF) in
accordance with Article 10.2 of the Directive.

Technical Construction File:

Prepared by:	Mike Ruduski
Function:	Compliance Engineer
Company:	AT&T Global Compliance Labs. PO Box 3030 101 Crawfords Corner Road Holmdel, NJ 07733-3030
TCF number:	TCF 95-1077EW
Date:	December 20, 1995
Competent Body:	NMi Certin B.V. P.O. Box 15 9822 ZG Niekerk The Netherlands
Signature:	
Function:	Staff Engineer
Date:	January 9, 1996

EC Representative: Glassman Europe Limited, 21 Campbell Court, Campbell Road, Bramley,
Tadley, Hampshire RG265EG, England.



Declaration of Conformity

Declaration of Conformity
according to Low Voltage Directive 73/23/EEC

Manufacturers Name: Glassman High Voltage, Inc.
Manufacturers Address: PO Box 317
124 West main Street
High Bridge, Nj 08829
USA

Manufacturer declares that the **EW Series** Power Supplies
conform to the following Product Specifications:

EN 61010-1:

Environmental conditions:

Indoor use
Altitude up to 2000 meters
Temperature 5 deg C to 40 deg C
Humidity 80% maximum
Input Mains Fluctuations +/-10%
Installation Category II per IEC1010-1, paragraph 1.4 & annex J
Pollution Degree 2 per IEC1010-1, paragraph 3.7.3

Means Of Conformity:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC based on design analysis and testing in accordance with Article 13, Annex IV of Directive 93/68/EEC, amending Directive 73/23/EEC.

Signature:

Function:

Staff Engineer

Date:

January 20, 1997

EC Representative: Glassman Europe Limited, 21 Campbell Court, Campbell Road, Bramley,
Tadley, Hampshire RG265EG, England.



EMC Directive Addendum

For Models: EK, ER, EW, MR, WR & WK

This high voltage power supply is classified as professional equipment and as such it has been designed and manufactured for industrial and commercial use only. It is not intended to be connected to a residential mains circuit.

Some commercial and/or industrial power supply authorities may require permission before connecting this supply to the mains. We have AC mains input characteristic data available upon request to assist you in obtaining this permission. Please contact our European representative for more information.

Glassman Europe Limited
21 Campbell Court
Campbell Road
Bramley
Tadley
Hampshire RG265EG
England

Telephone: (011) 44-1256-883-007

Fax: (011) 44-1256-883-017

SPECIFICATION CONTROL

Model: PS/EW50P12.0Y17

This model is in full accordance with the standard catalog specifications for the EW series, except as follows:

1. Nominal input voltage is 220VAC.
2. Standard DM (Digital Meter) option is included.
3. The front panel HV ON pushbutton switch is defeated so as to provide HV DC voltage upon the application of AC power.

REVISIONS				GLASSMAN HIGH VOLTAGE, INC.			
DESCRIPTION	CHK	DATE	LTR	FILE: TXTSPEC\ 12007Y17 .NR		SPECIFICATION CONTROL Y17 OPTION PS/EW50P12.0Y17	
				DRWN	DATE	DWG. NO. 102007-Y17	REV. NR
				DAS	121793		
				CHK	DATE	SHEET 1 OF 1	
				WJS	121793		

SECTION II - GENERAL INFORMATION

UNPACKING AND INSPECTION

First inspect package exterior for evidence of rough handling in transit. If none, proceed to unpack....carefully. After removing the supply from its shipping container, inspect it thoroughly for damage.

IMPORTANT! In cases of damage due to rough handling in transit, notify the carrier immediately if damage is evident from appearance of package. Do not destroy or remove any of the packing material used in a damaged shipment. Carrier companies will usually not accept claims for damaged material unless they can inspect the damaged item and its associated packing material. Claims must be made promptly - certainly within five days of receipt of shipment.

WARNING! To avoid the risk of shock and personal injury, Wait at least 3 minutes after disconnecting the AC mains power before removing top cover to gain access to analog meters

CORRESPONDENCE

Each Glassman power supply has an identification label on the chassis that bears its model and serial number. When requesting engineering or applications information, reference should be made to this model and serial number. If specific components or circuit sections are involved in the inquiry, also indicate the component symbol number(s) shown on the applicable schematic diagram.

GLASSMAN HIGH VOLTAGE, INC.

PO Box 317

124 West Main Street

High Bridge, NJ 08829

TEL. 908-638-3800

FAX. 908-638-3700

E-MAIL Support@GlassmanHV.com

www.GlassmanHV.com

SAFETY



This symbol, wherever it appears on the supply, alerts you to the presence of uninsulated dangerous voltages - voltages that may be sufficient to constitute a risk of electrical shock.



This symbol, wherever it appears on the supply, alerts you to important operating and maintenance instructions in the accompanying literature. Read the manual.

TERMS IN THIS MANUAL

CAUTION! statements identify conditions or practices that could result in damage to the equipment or other property.

WARNING! statements identify conditions or practices that could result in injury or loss of life.

WARNING!

To avoid the risk of shock or fire do not attempt to service the supply beyond that described in these instructions.

To avoid the risk of shock and personal injury, do not remove the product covers while the unit is operating or connected to the AC mains. Wait at least 3 minutes after disconnecting the AC mains power before removing any covers or panels. Wait at least 15 seconds before disconnecting the HV cable.

Upon loss of protective ground connection(s), all accessible conductive parts can render an electric shock.

Use only a power cord rated greater than the input current rating of the unit.
Use only a cord in good condition.

To avoid fire hazard, use only fuses of the correct type, voltage rating, and current rating as specified.

To avoid explosion, do not operate this product in an explosive atmosphere.

If liquid is spilled on the supply, shut it off immediately and disconnect it from the AC mains.

Always maintain adequate supply ventilation. All ventilation openings must remain free from obstruction.



CONNECTIONS AND CONTROLS

REAR PANEL ELEMENTS

J2 AC POWER INPUT

WARNING! The ground (center) terminal of this input should be connected to the AC outlet ground or other good earth ground.

J2 is a standard IEC receptacle. A mating line cord is provided with a plug for a standard NEMA 5-15 (NEMA 6-15 for OPTION "200" & "220") North American grounded outlet. In other regions, the appropriate plug or IEC cord set should be substituted. If the plug is removed from the cord provided, the wires should be connected as follows:

Green/Yellow - Ground

Brown - Line

Blue - Line or Neutral

Check to see that your input line voltage matches the rating of the supply before applying power (see Figures 8 and 9).

For CE compliant supplies used in Europe:

Please refer to the Declaration of Conformity located elsewhere in this manual for installation environment conditions required to conform to 73/23/EEC (Low Voltage Directive).

POWER ON INDICATOR

WARNING! When this lamp is illuminated, AC power is present. Do not apply or remove any connections to this unit until AC power is removed and the DC output has discharged.

J1 HIGH VOLTAGE OUTPUT

WARNING! Do not insert or remove the output cable from this connector until AC power is off and the DC output has discharged.

This is the high voltage output of the supply (see figures 8 and 9). Engage the con-



connector as follows:

UNITS > 5kV: Insert the high voltage cable provided into the receptacle.
Screw the threaded barrel onto the receptacle.

UNITS ≤ 5kV: Align plug, push in, and rotate 1/2 turn to engage.

E1 **GROUND STUD**

WARNING! Do not operate unit without good external earth ground connected to this point.

This is the main grounding terminal for the supply (see Figures 8 and 9).

TB1 **REMOTE CONTROL CONNECTOR**

WARNING! Do not make or remove connections to this connector or any other connector until power is off and the output has discharged.

This connector provides inputs and outputs for the remote control functions. For a description of each of these signals and their application see Figures 1-9 and the remote control interface section.

FRONT PANEL ELEMENTS

POWER Switch/Indicator

Applies AC power to the unit when in the on ("1") position (as long as power is present at J2). The integral lamp will illuminate when power is present.

WARNING! Do not apply or remove any connections to this unit when power is on.

"NC" OPTION USERS: The front panel elements that follow, are not present on "NC" option supplies.

HIGH VOLTAGE ON Pushbutton

Enables the high voltage output when depressed. This switch will not activate the high voltage if the interlock is open.

HIGH VOLTAGE ON Indicator

Illuminates after the HV ENABLE pushbutton is depressed (if the INTERLOCK signal is closed). If this indicator is on and the HV ENABLE signal is present, the supply will generate high voltage. If the INTERLOCK signal is opened, even temporarily, the high voltage will be disabled and the HIGH VOLTAGE ON indicator will extinguish. Once the interlock is closed, the HIGH VOLTAGE ON pushbutton must again be depressed to restart the supply.

Local KILOVOLTS & MILLIAMPERES CONTROL

10-turn controls provide a 0-10V signal for local MILLIAMPERE and KILOVOLT programming. Clockwise rotation increases output. A 10- turn dial with brake is provided to secure the settings, if desired.

KILOVOLT & MILLIAMPERE CONTROL Indicators

These indicators are located above their respective controls. If the KILOVOLTS CONTROL indicator is lit, the supply is operating as a constant voltage supply with an output voltage determined by the local KILOVOLTS CONTROL or remote V-PROGRAM signal. If the MILLIAMPERES CONTROL lamp is illuminated it means one of the following:

1. The supply is operating as a constant current supply with the output current determined by the local MILLIAMPERES CONTROL or remote I-PROGRAM signal.
2. The supply is limiting its' output power to 500 watts. Reduce MILLIAMPERE or KILOVOLTS CONTROL or remote program signals so that the output is less than 500 watts.

Output Meters

WARNING! To avoid the risk of shock and personal injury, Wait at least 3 minutes after disconnecting the AC mains power before removing top cover to gain access to analog meters

Analog meters display output voltage and current with an accuracy of +/- 2% (Note: Meters operational only when power is applied to the unit. See **WARNING!** statement below.)

***DM OPTION USERS:** 3-1/2 digit digital panel meters are provided in place of the analog meters.*

WARNING! When system is powered down under light or no load conditions, the output may retain a charge even after power is removed. This charge may not show on the kilovoltmeter. Discharge the output to ground or use an external meter to determine if output has discharged. Or, wait at least 15 seconds before making or removing any connections to the supply.

POLARITY Indicators

Indicates the output polarity of the supply with respect to ground.

INSTALLATION AND OPERATION

WARNING!

NEVER ATTEMPT TO OPERATE THIS UNIT WITHOUT A GOOD EARTH GROUND CONNECTED TO THE GROUND STUD, "E1", ON THE REAR PANEL. THE GROUND WIRE OF THE AC LINE CORD MUST ALSO BE GROUNDED.

READ AND FULLY UNDERSTAND THE OPERATING INSTRUCTIONS BEFORE APPLYING POWER TO THIS UNIT.

THIS EQUIPMENT EMPLOYS VOLTAGES THAT ARE DANGEROUS. EXTREME CAUTION MUST BE EXERCISED WHEN WORKING WITH THIS EQUIPMENT.

DO NOT HANDLE THE LOAD OR EXPOSED HIGH VOLTAGE TERMINATIONS OR ATTEMPT TO MAKE OR REMOVE ANY CONNECTIONS TO THE SUPPLY UNTIL THE LOAD AND/OR SUPPLY HAS BEEN DISCHARGED (GROUNDED). AN UNLOADED SUPPLY MAY TAKE UP TO 15 SECONDS TO FULLY DISCHARGE.

ALWAYS MAKE CERTAIN THAT THE RETURN SIDE OF THE LOAD IS CONNECTED TO COMMON OR GROUND.

INITIAL TURN ON

The following procedure, to connect and operate this equipment, should be carried out only after the unit has been placed or mounted in position.

1. Check the input voltage rating on the rear panel nameplate of the power supply and make certain that this is the rating of the available power source.
2. Check to see that the POWER switch is in the off ("0") position.
3. Check to see that the jumpers are present on TB1 and are connected for local operation (see Figure 9).

USERS WITH "NC" OPTION SUPPLIES: Connect external pot or control signal to V- PROGRAM terminal.

4. Connect the high voltage output cable and ground the return lead of the load as shown in Figures 7. Connect the high voltage cable to the receptacle on the rear panel.

"NC" OPTION USERS: Connect an external kilovoltmeter to the high voltage output or monitor the V-MONITOR terminal with a DVM (0 - 10VDC = 0 - rated kV output).

5. Connect the AC input cable provided to J2 and to the power source.
6. Rotate KILOVOLTS CONTROL to the fully counterclockwise position (set external pot or control signal on "NC" option units for zero volts program-



ming). This is optional, but desirable so as to prevent damage to external equipment caused by inadvertent overvoltage setting. Not required if correct setting has already been established.

"NC" OPTION USERS: skip step 7

7. Rotate the MILLIAMPERES CONTROL clockwise to a level that is greater than the amount that the connected load will require (any setting above zero if no load is connected).
8. Apply input power to the supply by setting POWER switch to the on ("1") position.

"NC" OPTION USERS: Skip step 9

9. Depress HIGH VOLTAGE ON pushbutton. The HIGH VOLTAGE ON indicator should illuminate.
10. Rotate KILOVOLT CONTROL (or increase external V-PROGRAM signal) until kilovoltmeter indicates desired output voltage.
11. To shut down supply, set POWER SWITCH to the off ("0") position.

WARNING!

DO NOT HANDLE THE LOAD OR EXPOSED HIGH VOLTAGE TERMINATIONS OR ATTEMPT TO MAKE OR REMOVE ANY CONNECTIONS TO THE SUPPLY UNTIL THE LOAD AND/OR SUPPLY HAS BEEN DISCHARGED (GROUNDED). AN UNLOADED SUPPLY MAY TAKE UP TO 15 SECONDS TO FULLY DISCHARGE.

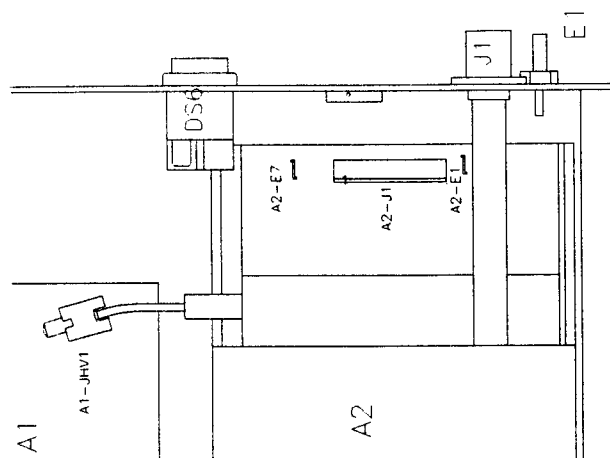
POLARITY REVERSAL - MODELS > 5kV

For reversible polarity models, the power supply has been shipped with two high voltage assemblies, one positive and one negative. One module is mounted in the chassis, the other one is shipped separately. A label on each high voltage assembly indicates its polarity. To reverse the polarity of the power supply, it is necessary to interchange the high voltage modules.

WARNING!: To avoid the risk of shock and personal injury, Wait at least 3 minutes after disconnecting the AC mains power before removing any covers or panels.

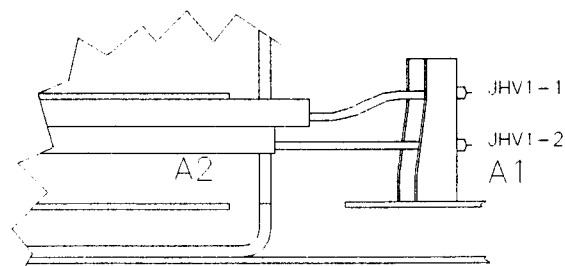
1. Remove the top cover from the unit. **BE SURE AC POWER IS DISCONNECTED AND HV IS DISCHARGED!**

2. Remove the electrical connector A2-P1 and the push lugs A2-E7 & A2-E1 which are connected to the high voltage assembly presently installed. Disconnect the two high voltage wires connected to A1-JHV1 on the main board A1 (APD-EW).



3. Tip the unit on its side to expose the four countersunk screws used to mount the high voltage module to the chassis basepan. Remove these screws, interchange the two high voltage modules and reinstall the screws.

4. Reconnect A2-P2, A2-E7, A2-E1 to the high voltage module and connect the high voltage wires to JHV1 of A1.



Warning! For continued safety A2-E7 & A2-E1 must be reinstalled!

5. Replace the top cover.

POLARITY REVERSAL - MODELS 5kV OR LESS

A polarity card has been provided, internal to the unit, to reverse the output polarity of the supply. If it is desired to determine the present setting of the polarity or to change the polarity, follow this procedure:

WARNING!: To avoid the risk of shock and personal injury, Wait at least 3 minutes after disconnecting the AC mains power before removing any covers or panels.

1. Remove the top cover from the unit. **BE SURE AC POWER IS DISCONNECTED AND HV IS DISCHARGED!**
2. Locate the high voltage board on the right hand side of the chassis (as viewed from the front).
3. Locate the polarity card plugged into the high voltage board and observe that the card is labeled to indicate the installed polarity.
4. If it is desired to change the polarity of the supply, simply unplug the card, flip it over, and reinstall carefully.
5. Replace the top cover.

REMOTE CONTROL INTERFACE

TB1-1 GROUND

This is the instrumentation ground connection. This terminal should not be used as the main connection to earth ground. Use the main ground terminal, "E1", for that purpose. TB1-1 is normally connected to the adjacent COMMON terminal unless a floating common is desired (see TB1-2). If a floating common is employed, this connection (or E1) should be used as the load return (see Figure 7).

TB1-2 COMMON

This terminal is the instrumentation/measurement return. Normally, COMMON is at ground potential because of a jumper to the GROUND terminal. In this configuration, instrument returns and load return may be connected to either COMMON or GROUND. If desired, the user may remove this jumper and allow the COMMON to "float". This may be done for isolation or for the purpose of inserting a current monitoring device.

When common is floating, it is clamped internally by a bi-directional zener diode. Thus, the inserted drop should not exceed 5.0V or erroneous readings may be obtained. In this configuration, the load return must be connected to GROUND and all instrument/ programming returns must be connected to COMMON. In addition, instrument returns to COMMON must be isolated from GROUND (see Figures 7, 8 & 9).

TB1-3 INTERLOCK

This terminal must be connected to COMMON to enable the supply. If desired, the jumper may be removed and replaced by an external switch which must be closed for the supply to operate. If the external switch is opened, the supply output will drop to zero. When the switch is again closed, the front panel HIGH VOLTAGE ON pushbutton must be depressed to re-enable the supply (except on "NC" option supplies which will re-enable immediately) (see Figure 1).

TB1-4 V-MONITOR

A 0-10V positive signal (with respect to COMMON), in direct proportion to the output voltage, is available at this terminal. An internal 10k ohm, 1%, limiting resistance protects the circuitry. Therefore, it is recommended that a digital voltmeter be used to monitor this output. It is also acceptable to use a 1mA DC full scale instrument (i.e. analog meter) for monitor purposes (see Figure 5).

TB1-5 V-PROGRAM

TB1-6 LOCAL V-CONTROL ("NC" OPTION: No Connection)

A positive 0-10V signal (with respect to COMMON) at TB1-5 will program the output voltage proportionally from zero to rated output. This input can be programmed in several ways (see Figures 3, 8 & 9):

- * A user supplied 0 - +10V signal.
- * A user supplied potentiometer (5-50k ohms, 10k nominal) can be connected between the 10V REFERENCE and COMMON, with the wiper connected to the V-PROGRAM terminal.
- * The 0 - +10V signal available at TB1-6, and adjusted by the local (front panel)

KILOVOLTS CONTROL (except on "NC" option supplies).

- * The V-PROGRAM input may be jumpered to the REFERENCE voltage terminal(s) for a fixed output at the maximum voltage.

TB1-7 I-MONITOR

A 0-10V signal, positive with respect to COMMON, and in direct proportion to the output current, is available at this terminal. An internal 10k ohm, 1%, limiting resistance protects the circuitry. Therefore, it is recommended that a digital voltmeter be used to monitor this output. It is also acceptable to use a 1mA DC full scale instrument (i.e. analog meter) for monitor purposes (see Figure 6).

TB1-8 I-PROGRAM

TB1-9 LOCAL I-CONTROL ("NC" OPTION: REFERENCE)

A 0-10V positive signal (with respect to COMMON) at TB1-8 will program the output current proportionally from zero to full output. This input can be programmed in several ways (see Figures 4, 8 & 9):

- * A user supplied 0 - +10V signal.
- * A user supplied potentiometer (5-50k ohms, 10k nominal) can be connected between the 10V REFERENCE and COMMON, with the wiper connected to the I-PROGRAM terminal.
- * The 0 - +10V signal available at TB1-9, adjusted by the local (front panel) MILLIAMPERES CONTROL.

*"NC" OPTION USERS: No local control is provided;
an extra REFERENCE is provided at TB1-9.*

- * The I-PROGRAM input may be jumpered to the REFERENCE voltage terminal(s) for a fixed current limit at the maximum rated current.

TB1-10 REFERENCE

The output of this terminal is an ultra-stable, positive, 10V reference voltage (with

respect to common) that is supplied for user programming applications. Maximum current drain from this point should be limited to 4mA.

"NC" OPTION USERS: An additional REFERENCE is available on TB1-9.

TB1-11 **HV ENABLE**

This terminal must be connected to a positive 2.5-15V source (with respect to common) to enable the supply. A 0-1.5V signal at this input will disable the supply. When no external control is required this input can be jumpered to the 10V REFERENCE terminal (see Figure 2).

TB1-12 **X1**

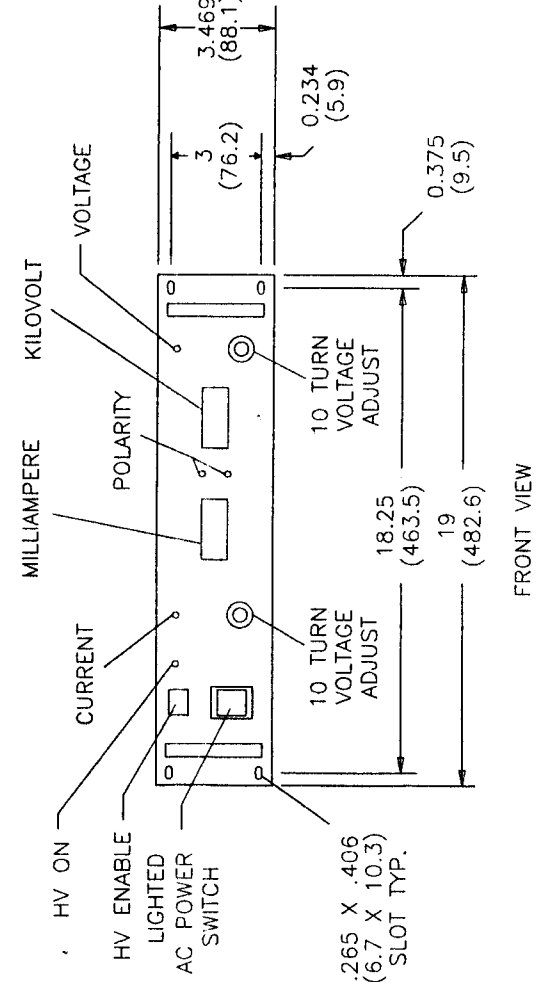
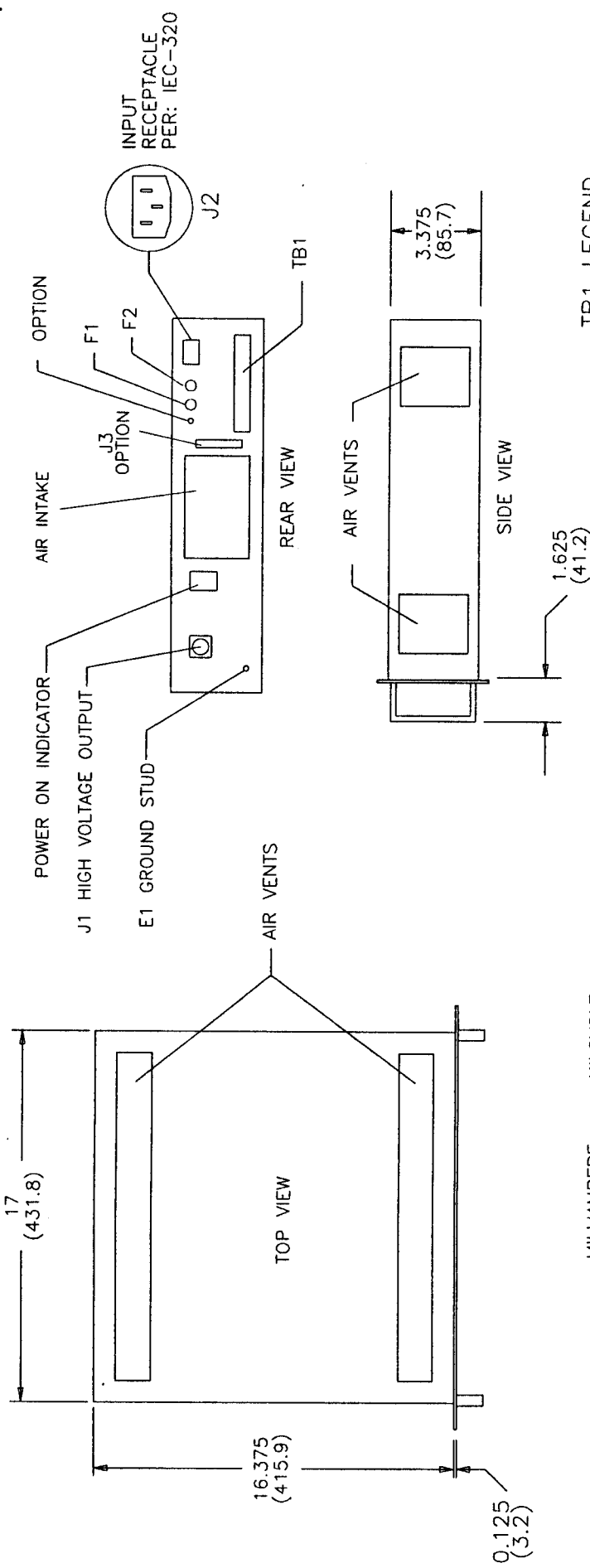
This terminal is reserved for special options or future expansion of features.

NOTE:

Figure 8 is just one example of the many possible interface configurations.

Figure 9 shows the minimum number of connections to completely enable the supply. In this configuration, output voltage and current are controlled by the front panel controls (except on "NC" option units which have no front panel controls). No external interlock or TTL signals are required.

REV	BY	DESCRIPTION	DATE	APPROVED
NR-1	AH	DFX INTO .DWG	022601	<i>cm</i>



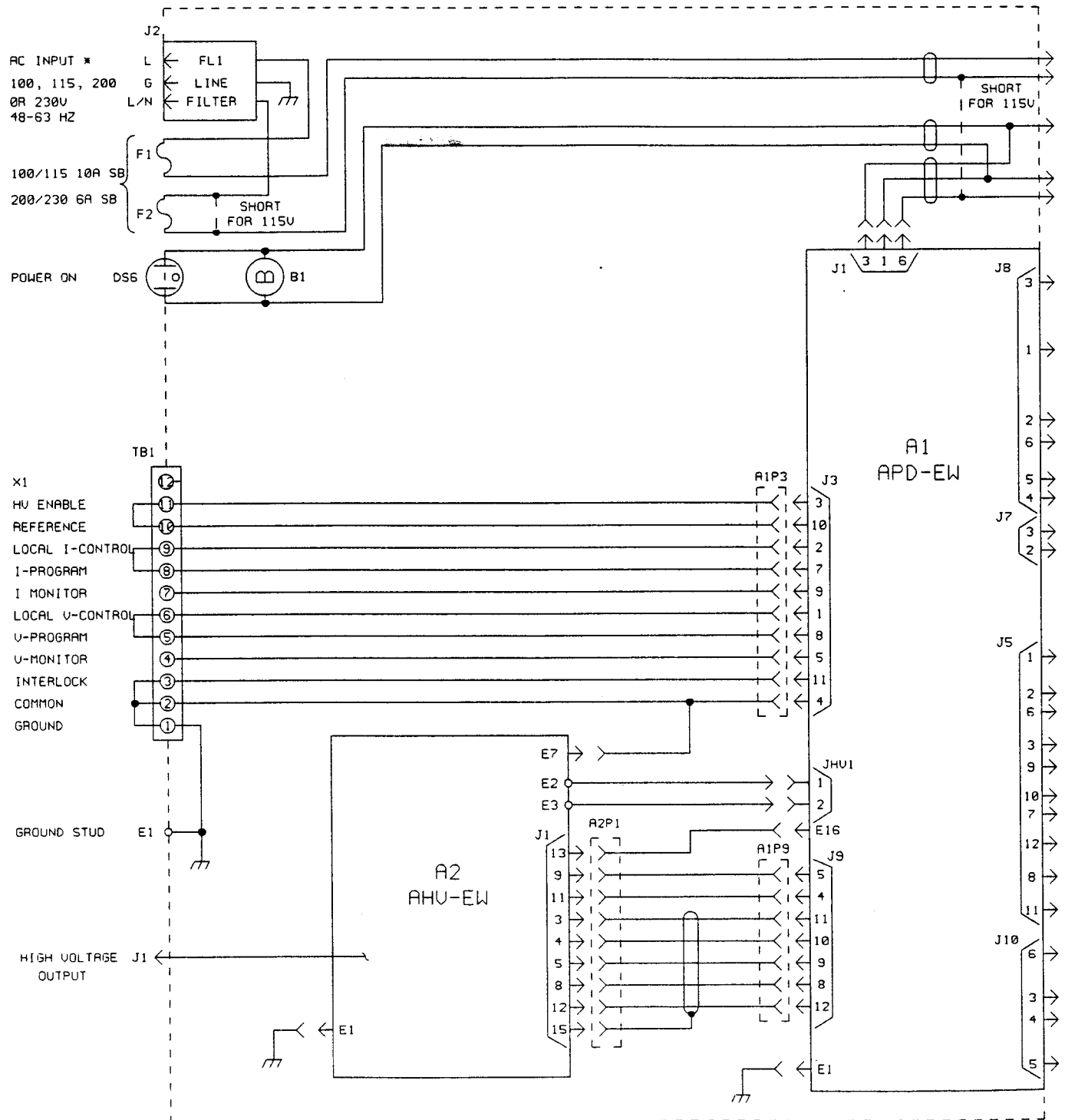
TB1 LEGEND

1 GROUND	5 V-PROGRAM	9 LOCAL I-CONT
2 COMMON	6 LOCAL V-CONT	10 REFERENCE
3 INTERLOCK	7 I-MONITOR	11 H V ENABLE
4 V-MONITOR	8 I-PROGRAM	12 X1

NET WEIGHT:
18 POUNDS; 8kg

FILE NO.	EXTENSION	APPROVALS	DATE	TITLE	OUTLINE & INSTALLATION	REV.
2011\80003-1.DWG		DRAWN TA	091290	GLASSMAN HIGH VOLTAGE, INC. P.O. BOX 317, HIGH BRIDGE, N.J. 08829 (201) 638-3800 FAX (201) 638-3700	AM3-EW,DIGITAL	NR-1
CHECKED JMC	101790	RELEASED		DWG.NO. 201180-003		
				SCALE	SHEET 1 OF 1	

REV	BY	DESCRIPTION	DATE	APPROVED
NR-1		REDRAWN	012292	DWS
NR-2		CAD CONVERSION	072195	EJM
A	TJM	ECH 6289; REMOVED A2J1 PIN 7 & A1J9 PIN 3.	071499	<i>CM</i>



NOTES:

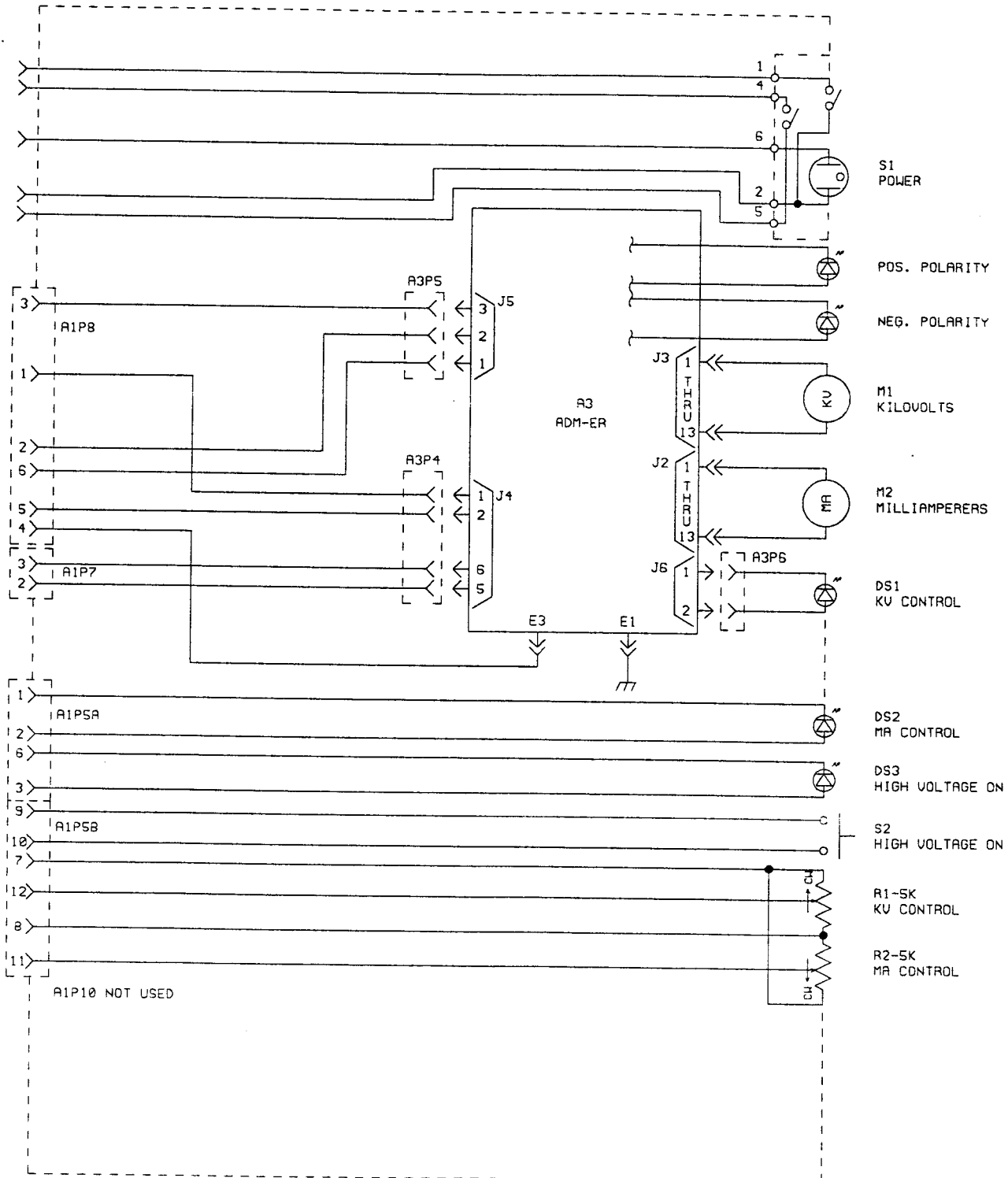
* REFER TO REAR PANEL LABEL FOR SPECIFIC INPUT VOLTAGE.

G.H.V., INC. RESERVES THE RIGHT TO SUBSTITUTE PARTS WITH THOSE OF SIMILAR OR BETTER PERFORMANCE.

REDUCED ONLY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: DEC. XXX% DEC. %	FILE NO.	EXTENSION	GLASSMAN HIGH VOLTAGE, INC. P.O. BOX 551, WHITEHOUSE STATION, N.J. 08889 (908) 534-9007 FAX (908) 534-5672		
	APPROVALS	DATE	TITLE		
MATERIAL	DRAWN	MES	102990	SCHEMATIC MAIN ASSEMBLY AM3-EW-1	
FINISH	CHECKED	J.M.	103190	DWG. NO.	300086-001
DO NOT SCALE DRAWING	RELEASED			REV.	A
				SCALE	NONE
				SHEET	1 OF 1

ZONE	REV	DESCRIPTION	DATE	APPROVED
	NR-1	ADDED WK SERIES	112791	J.M.
	NR-2	ADDED "REDUCED ONLY"	012492	DWS
	NR-3	CAD CONVERSION	072095	<i>[Signature]</i>



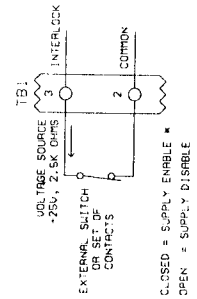
NOTES:

- ALL ITEMS SHOWN ARE PREFIXED BY "1".
EXAMPLE: 1S1.
- G.H.V., INC. RESERVES THE RIGHT TO SUBSTITUTE PARTS WITH THOSE OF SIMILAR OR BETTER PERFORMANCE.

REDUCED ONLY

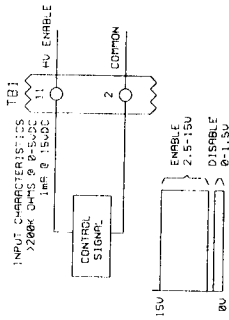
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: DEC. XXX ⁺ XX ⁻ DEC. X ⁺	FILE NO.	EXTENSION	GLASSMAN HIGH VOLTAGE, INC.		
	\3000\87003#3.SCH		P.O. BOX 551, WHITEHOUSE STATION, N.J. 08989		
			(908) 531-9007 FAX (908) 531-5672		
	APPROVALS	DATE	TITLE		
MATERIAL	DRAWN MES	103190	SCHEMATIC		
FINISH	CHECKED J.M.	103190	FRONT PANEL, DM OPT.		
	RELEASED		AFP-EW-1-D, AFP-WK-1-D		
DO NOT SCALE DRAWING			C	DWG. NO.	REV.
				300087-003	NR-3
			SCALE NONE	SHEET 1	OF 1

REMOTE INTERLOCK

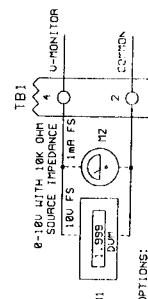


• (REFER TO INSTRUCTION MANUAL)

REMOTE HV ENABLE

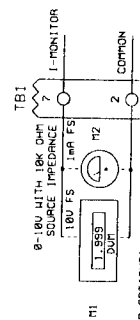


VOLTAGE MONITOR



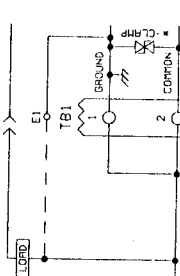
U-MONITOR OPTIONS:
M1 - 0 - 180V FULL SCALE CURRENT METER
M2 - 0 - 180V FULL SCALE CURRENT METER
M3 - 0 - 180V FULL SCALE CURRENT METER
M4 - 0 - 180V FULL SCALE CURRENT METER
M5 - 0 - 180V FULL SCALE CURRENT METER

CURRENT MONITOR



I-MONITOR OPTIONS:
M1 - 0 - 180V FULL SCALE CURRENT METER
M2 - 0 - 180V FULL SCALE CURRENT METER
M3 - 0 - 180V FULL SCALE CURRENT METER
M4 - 0 - 180V FULL SCALE CURRENT METER
M5 - 0 - 180V FULL SCALE CURRENT METER

COMMON AND GROUND

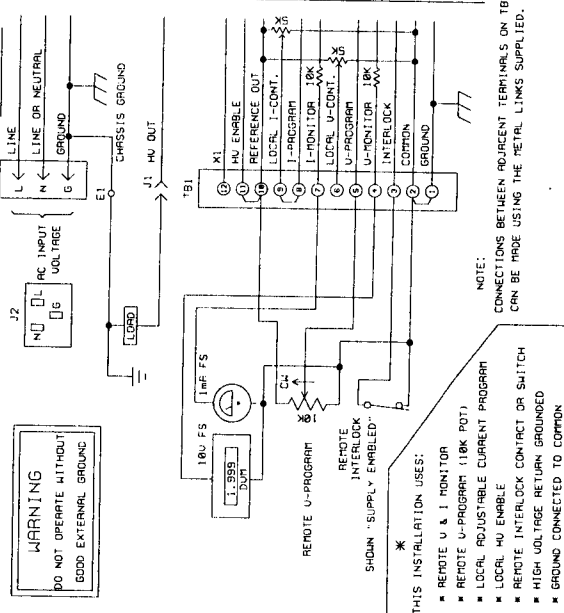


MODELS <= 5KV: CLAMP VOLTAGE = 180V
MODELS > 5KV: CLAMP VOLTAGE = 150V

TO "FLOUT" COMMON FOR ISOLATION OR MEASUREMENT PURPOSES, REMOVE COMMON AND GROUND CONNECTION ON TB1. FOR THIS CONFIGURATION INSTRUMENT RETURNS MUST BE TIED TO COMMON, AND LOAD RETURN MUST BE CONNECTED TO GROUND. INSTRUMENT RETURNS MUST BE FLOATING WITH RESPECT TO GROUND, SINCE COMMON IS INTERNALLY CLIPPED TO GROUND WITH A BIDIRECTIONAL ZENER, THE DROP ACROSS THE SHUNT SHOULD BE < 5.0 V TO MAINTAIN ACCURACY.

FIGURE 7

A TYPICAL ER OR EW INSTALLATION

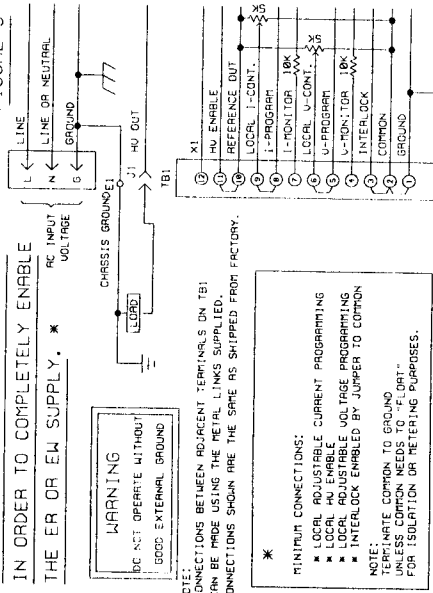


NOTE:

CONNECTIONS BETWEEN ADJACENT TERMINALS ON TB1 CAN BE MADE USING THE METAL LINKS SUPPLIED.

FIGURE 8

MINIMUM NUMBER OF CONNECTIONS IN ORDER TO COMPLETELY ENABLE THE ER OR EW SUPPLY.



NOTE:

CONNECTIONS BETWEEN ADJACENT TERMINALS ON TB1 CAN BE MADE USING THE METAL LINKS SUPPLIED.

CONNECTIONS SHOWN ARE THE SAME AS SHIPPED FROM FACTORY.

MINIMUM CONNECTIONS:

- LOCAL ADJUSTABLE CURRENT PROGRAMMING
- LOCAL HV ENABLE
- LOCAL ADJUSTABLE VOLTAGE PROGRAMMING
- INTERLOCK ENABLED BY JUMPER TO COMMON

NOTE:

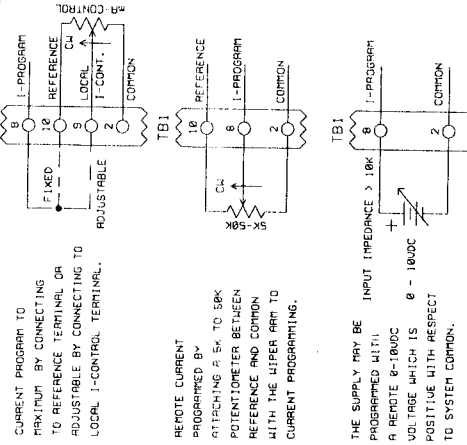
TERMINATE COMMON TO GROUND FOR ISOLATION OR MEASUREMENT PURPOSES.

REDUCED ONLY

FILE NO.	EXTENSION	GLASSMAN HIGH VOLTAGE, INC.
1000-1000-1000	1000-1000-1000	1000-1000-1000
DATE	DATE	DATE
APPROVALS	APPROVALS	APPROVALS
DESIGNER	DESIGNER	DESIGNER
CHECKED	CHECKED	CHECKED
FINISH	FINISH	FINISH
DO NOT SCALE DRAWING	DO NOT SCALE DRAWING	DO NOT SCALE DRAWING

REV	BY	DESCRIPTION	DATE	APPROVED
1	1	MODEL 54 SERIES NOTE 128750	12/11	12/11
2	2	TO FIG 7 & FIG 2 SIO	12/11	12/11
3	3	WFS, SWR & JACO	12/11	12/11
4	4	ECN 2485, FIG 7	12/11	12/11
5	5	ECN 2485, FIG 7	12/11	12/11
6	6	ECN 2485, FIG 7	12/11	12/11
7	7	ECN 2485, FIG 7	12/11	12/11
8	8	ECN 2485, FIG 7	12/11	12/11
9	9	ECN 2485, FIG 7	12/11	12/11
10	10	ECN 2485, FIG 7	12/11	12/11

FIGURE 4



CURRENT PROGRAM TO

MAXIMUM BY CONNECTING TO REFERENCE TERMINAL OR ADJUSTABLE BY CONNECTING TO LOCAL I-CONTROL TERMINAL.

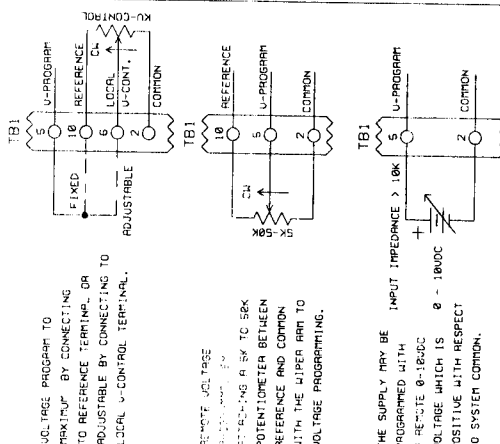
REMOTE CURRENT

PROGRAMMED BY ATTACHING A 5K TO 50K POTENTIOMETER BETWEEN REFERENCE AND COMMON WITH THE WIPER ARM TO CURRENT PROGRAMMING.

THE SUPPLY MAY BE

PROGRAMMED WITH A REMOTE 0-180V VOLTAGE WHICH IS POSITIVE WITH RESPECT TO SYSTEM COMMON.

FIGURE 3



VOLTAGE PROGRAM TO

MAXIMUM BY CONNECTING TO REFERENCE TERMINAL OR ADJUSTABLE BY CONNECTING TO LOCAL U-CONTROL TERMINAL.

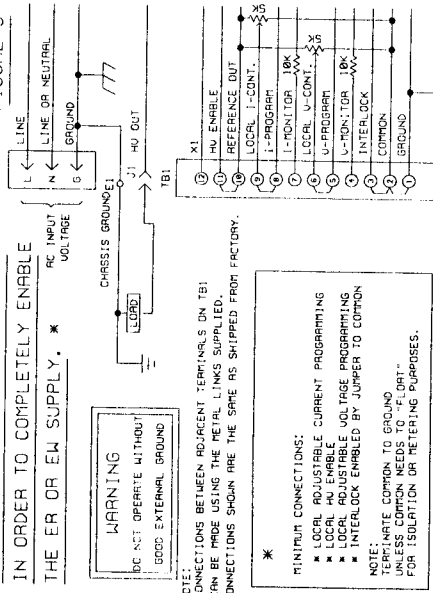
REMOTE VOLTAGE

PROGRAMMED BY ATTACHING A 5K TO 50K POTENTIOMETER BETWEEN REFERENCE AND COMMON WITH THE WIPER ARM TO VOLTAGE PROGRAMMING.

THE SUPPLY MAY BE

PROGRAMMED WITH A REMOTE 0-180V VOLTAGE WHICH IS POSITIVE WITH RESPECT TO SYSTEM COMMON.

FIGURE 9



NOTE:

CONNECTIONS BETWEEN ADJACENT TERMINALS ON TB1 CAN BE MADE USING THE METAL LINKS SUPPLIED.

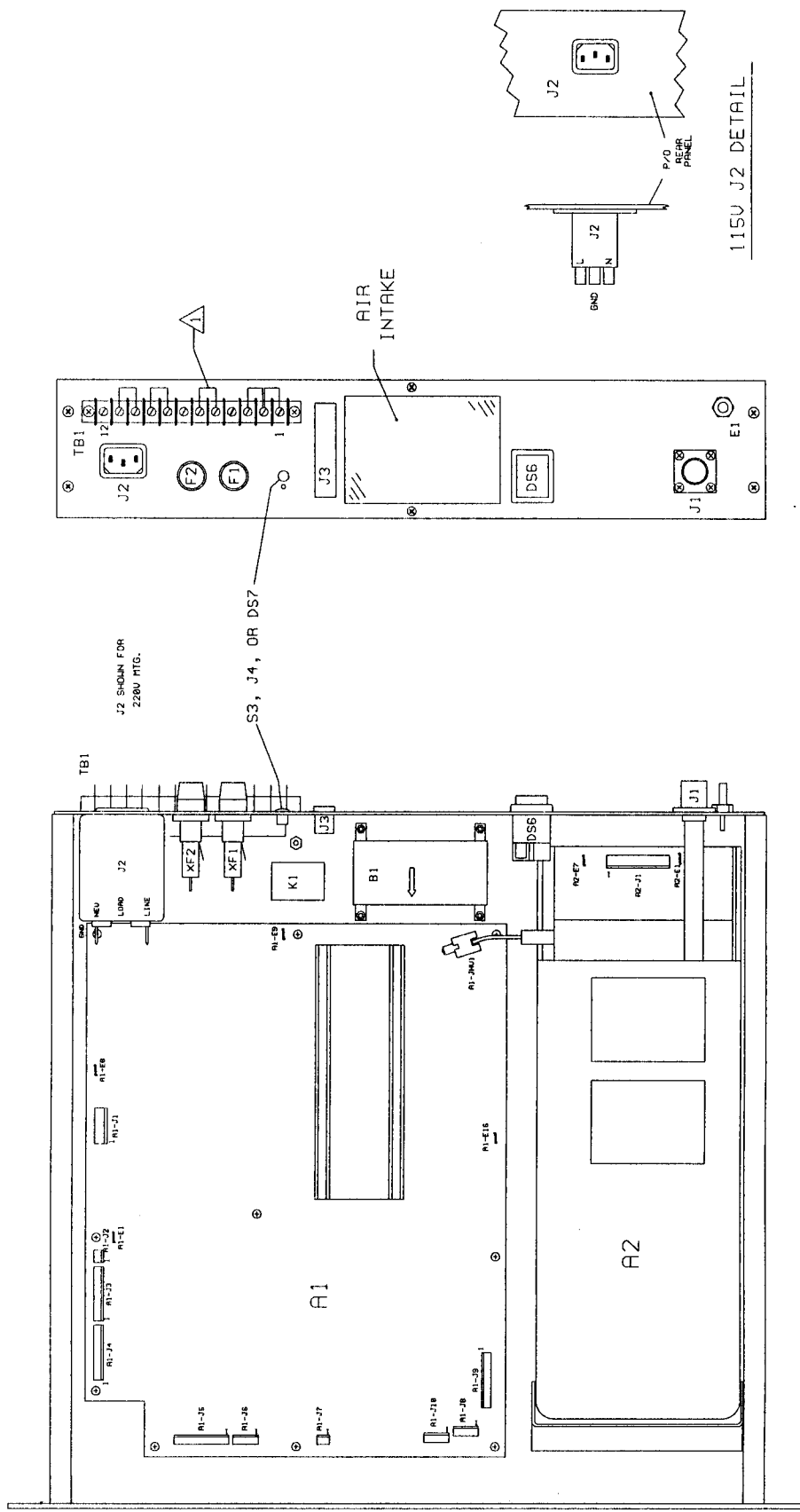
CONNECTIONS SHOWN ARE THE SAME AS SHIPPED FROM FACTORY.

MINIMUM CONNECTIONS:

- LOCAL ADJUSTABLE CURRENT PROGRAMMING
- LOCAL HV ENABLE
- LOCAL ADJUSTABLE VOLTAGE PROGRAMMING
- INTERLOCK ENABLED BY JUMPER TO COMMON

NOTE:

TERMINATE COMMON TO GROUND FOR ISOLATION OR MEASUREMENT PURPOSES.



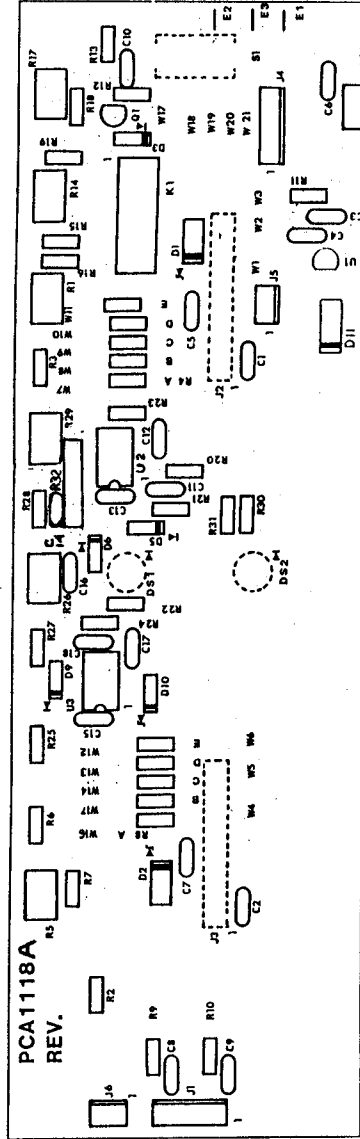
115V J2 DETAIL

NOTE:

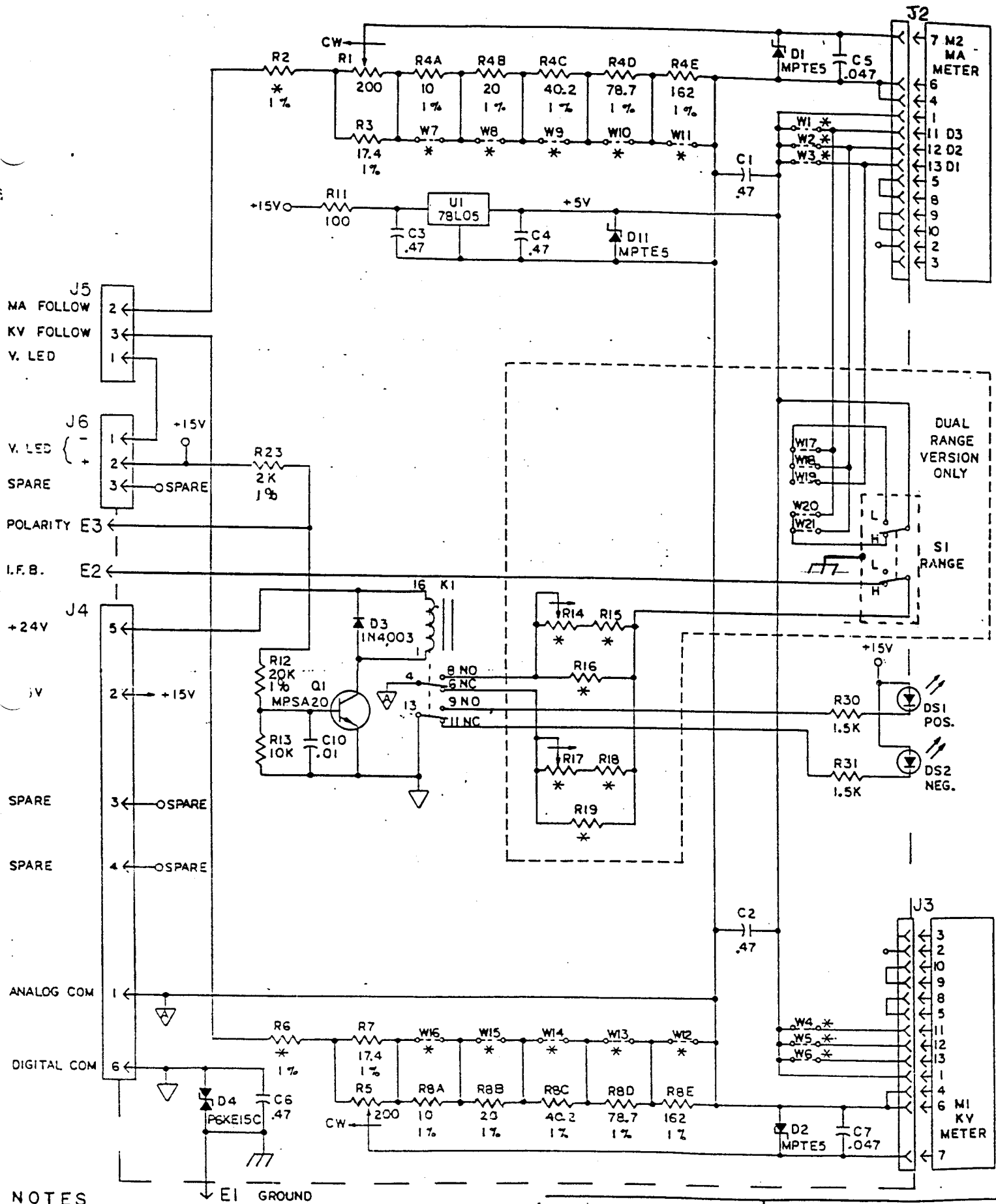
THIS POSITION NOT USED ON "BLANK FRONT PANEL" MODELS.

REDUCED ONLY

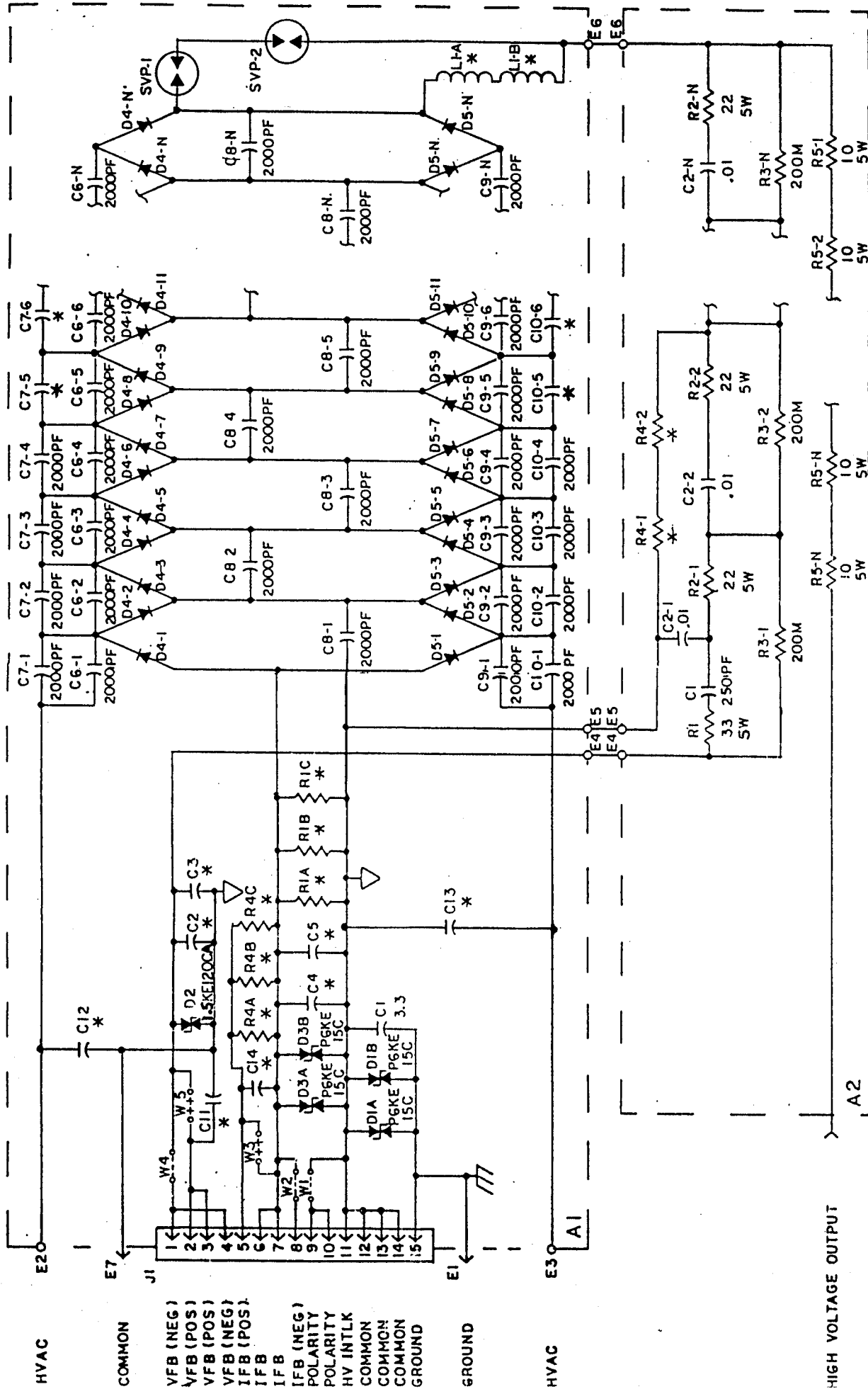
UNLESS OTHERWISE SPECIFIED IN INCHES		FILE NO.	EXTENSION	GLASSMAN HIGH VOLTAGE, INC.	
TOLERANCES ARE:		14012-28011A SCH		P.O. BOX 551, WHITEHOUSE STATION, N.J. 08889	
DEC. MM. :		NO. 2		(100) 534-3007 FAX (100) 534-5572	
DO NOT SCALE DRAWING		APPROVALS	DATE	TITLE	
		DESIGNED		PARTS PLACEMENT	
		CHECKED		REV. NO.	
		RELEASED		401229-011	
				REV. NR	
				1 OF 1	



REVISIONS		GLASSMAN HIGH VOLTAGE, INC.	
REV.	DESCRIPTION	DATE	BY
1	INITIAL	1/1/71	1/1/71
2	REVISION	1/1/71	1/1/71
3	REVISION	1/1/71	1/1/71
4	REVISION	1/1/71	1/1/71
5	REVISION	1/1/71	1/1/71
6	REVISION	1/1/71	1/1/71
7	REVISION	1/1/71	1/1/71
8	REVISION	1/1/71	1/1/71
9	REVISION	1/1/71	1/1/71
10	REVISION	1/1/71	1/1/71
11	REVISION	1/1/71	1/1/71
12	REVISION	1/1/71	1/1/71
13	REVISION	1/1/71	1/1/71
14	REVISION	1/1/71	1/1/71
15	REVISION	1/1/71	1/1/71
16	REVISION	1/1/71	1/1/71
17	REVISION	1/1/71	1/1/71
18	REVISION	1/1/71	1/1/71
19	REVISION	1/1/71	1/1/71
20	REVISION	1/1/71	1/1/71
21	REVISION	1/1/71	1/1/71
22	REVISION	1/1/71	1/1/71
23	REVISION	1/1/71	1/1/71
24	REVISION	1/1/71	1/1/71
25	REVISION	1/1/71	1/1/71
26	REVISION	1/1/71	1/1/71
27	REVISION	1/1/71	1/1/71
28	REVISION	1/1/71	1/1/71
29	REVISION	1/1/71	1/1/71
30	REVISION	1/1/71	1/1/71
31	REVISION	1/1/71	1/1/71
32	REVISION	1/1/71	1/1/71
33	REVISION	1/1/71	1/1/71
34	REVISION	1/1/71	1/1/71
35	REVISION	1/1/71	1/1/71
36	REVISION	1/1/71	1/1/71
37	REVISION	1/1/71	1/1/71
38	REVISION	1/1/71	1/1/71
39	REVISION	1/1/71	1/1/71
40	REVISION	1/1/71	1/1/71
41	REVISION	1/1/71	1/1/71
42	REVISION	1/1/71	1/1/71
43	REVISION	1/1/71	1/1/71
44	REVISION	1/1/71	1/1/71
45	REVISION	1/1/71	1/1/71
46	REVISION	1/1/71	1/1/71
47	REVISION	1/1/71	1/1/71
48	REVISION	1/1/71	1/1/71
49	REVISION	1/1/71	1/1/71
50	REVISION	1/1/71	1/1/71
51	REVISION	1/1/71	1/1/71
52	REVISION	1/1/71	1/1/71
53	REVISION	1/1/71	1/1/71
54	REVISION	1/1/71	1/1/71
55	REVISION	1/1/71	1/1/71
56	REVISION	1/1/71	1/1/71
57	REVISION	1/1/71	1/1/71
58	REVISION	1/1/71	1/1/71
59	REVISION	1/1/71	1/1/71
60	REVISION	1/1/71	1/1/71
61	REVISION	1/1/71	1/1/71
62	REVISION	1/1/71	1/1/71
63	REVISION	1/1/71	1/1/71
64	REVISION	1/1/71	1/1/71
65	REVISION	1/1/71	1/1/71
66	REVISION	1/1/71	1/1/71
67	REVISION	1/1/71	1/1/71
68	REVISION	1/1/71	1/1/71
69	REVISION	1/1/71	1/1/71
70	REVISION	1/1/71	1/1/71
71	REVISION	1/1/71	1/1/71
72	REVISION	1/1/71	1/1/71
73	REVISION	1/1/71	1/1/71
74	REVISION	1/1/71	1/1/71
75	REVISION	1/1/71	1/1/71
76	REVISION	1/1/71	1/1/71
77	REVISION	1/1/71	1/1/71
78	REVISION	1/1/71	1/1/71
79	REVISION	1/1/71	1/1/71
80	REVISION	1/1/71	1/1/71
81	REVISION	1/1/71	1/1/71
82	REVISION	1/1/71	1/1/71
83	REVISION	1/1/71	1/1/71
84	REVISION	1/1/71	1/1/71
85	REVISION	1/1/71	1/1/71
86	REVISION	1/1/71	1/1/71
87	REVISION	1/1/71	1/1/71
88	REVISION	1/1/71	1/1/71
89	REVISION	1/1/71	1/1/71
90	REVISION	1/1/71	1/1/71
91	REVISION	1/1/71	1/1/71
92	REVISION	1/1/71	1/1/71
93	REVISION	1/1/71	1/1/71
94	REVISION	1/1/71	1/1/71
95	REVISION	1/1/71	1/1/71
96	REVISION	1/1/71	1/1/71
97	REVISION	1/1/71	1/1/71
98	REVISION	1/1/71	1/1/71
99	REVISION	1/1/71	1/1/71
100	REVISION	1/1/71	1/1/71



REVISIONS				GLASSMAN HIGH VOLTAGE, INC.			
DESCRIPTION	CHK	DATE	LTR	TOLERANCES	SCHEMATIC		
ECN 7238: SI TO GROUND		7/2/01	A	DEC 2002 FRAC 2	DIGITAL METER ASSY		
				Drawn Date	DRAWING NO.		REV.
				Check Date	300058-002		A
				Scale	1 of 1		

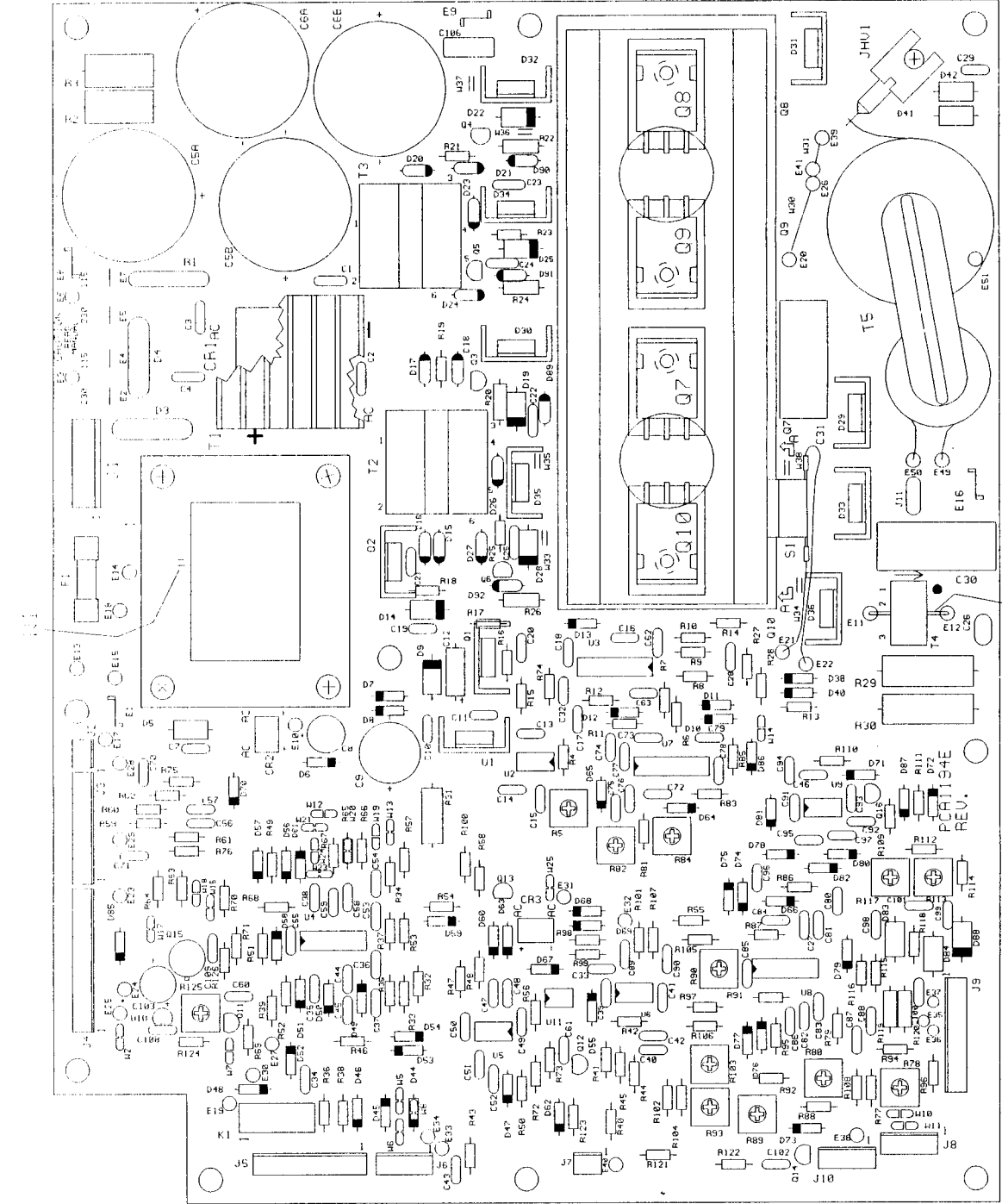


NOTE


- * = SELECTED PER MODEL.
- D4 AND D5 SHOWN FOR POSITIVE POLARITY.
REVERSE DIRECTION FOR NEGATIVE POLARITY.
- G.H.V., INC. RESERVES THE RIGHT TO SUBSTITUTE PARTS
WITH THOSE OF SIMILAR OR BETTER PERFORMANCE.

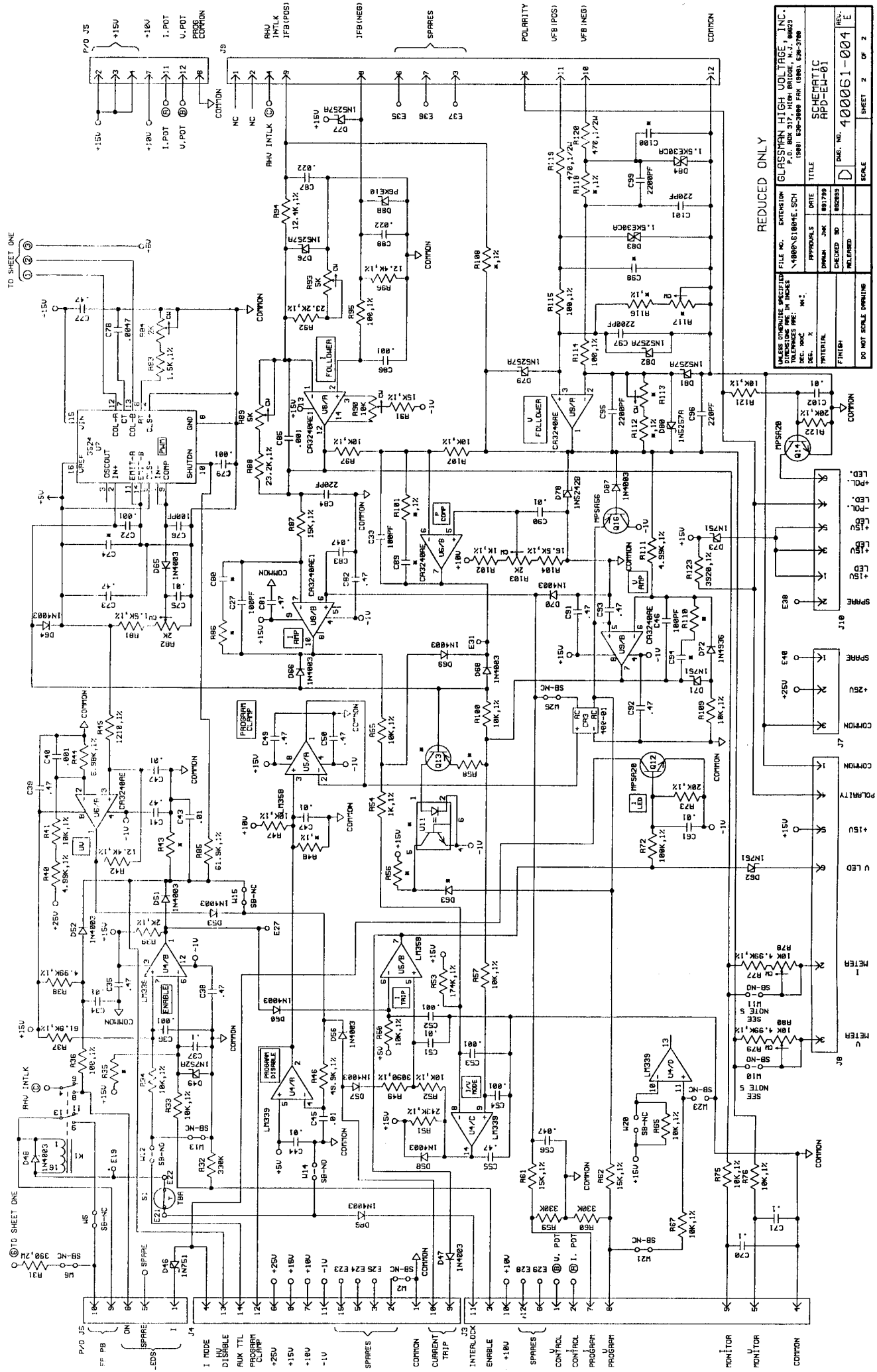
REDUCED ONLY

REVISIONS		TOLERANCES		SCALE	
DESCRIPTION	CHK	DATE	LTR	DATE	LTR
IC7 & IC10 VALUES ECN 5248: R1 WAS 2W ECN 9165: R2 WAS 5W PLK120C.	MS	5-6-90	MS	5-6-90	MS
GLASSMAN HIGH VOLTAGE, INC.		SCHEMATIC		HIGH VOLTAGE ASSEMBLY	
				AHV-EW 20-60KV	
				DRAWING NO.	
				REV.	
				300088-002	
				B	



REV	BY	DESCRIPTION	DATE	APPROVED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE : DEC. XXX+ DEG. ±	FILE NO. EXTENSION NPCA1\194021#.PCB	
	APPROVALS	DATE
	DRAWN JHK	092193
	CHECKED JAC	092199
THIRD ANGLE PROJECTION	RELEASED	
	SSP	
DO NOT SCALE DRAWING		
	GLASSMAN HIGH VOLTAGE, INC. P.O. BOX 551, WHITEHOUSE STATION, N.J. 08869 (908) 534-9007 FAX (908) 534-5511	
	TITLE PARTS PLACEMENT	
APD-EW-3		
C	DWG. NO. PCA1194-021	REV. NR
SCALE —	SHEET 1 OF 1	



REDUCED ONLY

FILE NO.	14880-51804E	SCH.	1	EXTENSION	1
GLASSMAN HIGH VOLTAGE, INC.	P.O. BOX 317	HIGH BRIDGE, N.J.	08823	DATE	1980
DES. BY	14880-51804E	CHECKED BY	14880-51804E	RELEASED BY	14880-51804E
TITLE	14880-51804E	SHEET	2	OF	2
SCALE	1:1	DO NOT SCALE DRAWING			
REV.	1	2	3	4	5
40061-004 E					

APD-EW-3-E0YQ1
APD-EW-3-E1Y09
APD-EW-3-H0Y09
APD-EW-3-H1Y09
APD-EW-3-H1Y17
APD-EW-3-J0Y09

These assemblies are the same as APD-EW-3 (schematic # 400061-004), with the following schematic modifications:

1. J5-9 is wired to J5-10.

REVISIONS				GLASSMAN HIGH VOLTAGE, INC.			
DESCRIPTION	CHK	DATE	LTR	FILE: TXTSCHEM\ 40061004 .12		SCHEMATIC MODIFICATION POWER DRIVE ASSEMBLY See models above	
				DRWN	DATE	REFER TO DWG 400061-004	
				DAS	051100	DWG. NO.	REV.
				CHK	DATE	400061-004-112	NR
				<i>AM</i>	051100	SHEET 1 OF 1	