

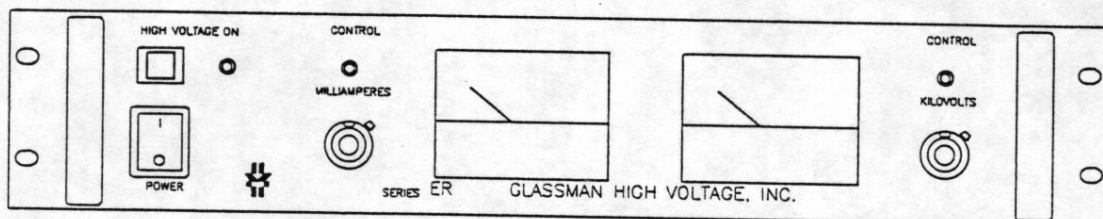
INSTRUCTION MANUAL

ER SERIES

MODEL: PS/ER15N20.0Y75

SERIAL #: M917267-01

DATE: 9 - 15 - 00



Innovations in high voltage power supply technology.
GLASSMAN HIGH VOLTAGE INC.
Route #22 East, Salem Industrial Park, P.O. Box 551
Whitehouse Station N.J. 08889



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ER SERIES

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EMC Directive Addendum

For Models: ER, WR

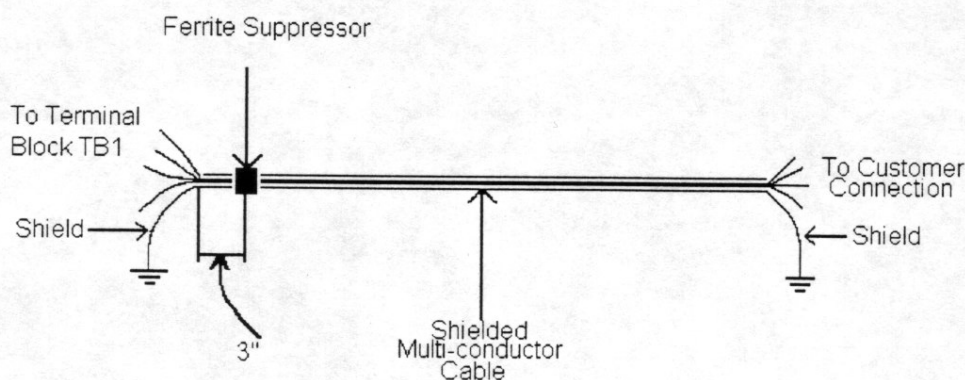
Your high voltage power supply has been designed and tested to ensure compliance with the European Community's EMC directives, when used as described in the instruction manual. However, as we do not supply as standard a remote interface cable, the following precautions must be followed in order to ensure continued compliance with EMC directive radiated emissions requirements, as specified in the harmonized standard EN55011 Group 1, Class B.

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, position 1 of TB1 can be used to make the ground connection (see drawing below).
2. A ferrite suppressor must be placed at the power supply end of the cable over the shield. This suppressor must be located within 3" of the terminations of the cable (see drawing below). The ferrite suppressor should have an impedance of 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 EMC fields in excess of 3V/m, the display value may read incorrectly. However, the actual HV output remains stable and the true HV output level can be read from the Voltage Monitor.





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 5 minutes after disconnecting the AC mains power before removing top cover to gain access to analog meters

CAUTION! Units equipped with analog meters are shipped from the factory with a protective shorting jumper across the terminals of each meter. These jumpers must be removed prior to power supply operation.

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.

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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 5 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 "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 connec-



tor as follows:

UNITS > 6kV: Insert the high voltage cable provided into the receptacle. Screw the threaded barrel onto the receptacle.

UNITS ≤ 6kV: 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 Push-button

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 push-button 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 push-button 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 Indicator

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, the supply is operating as a constant current supply with the output current determined by the local MILLIAMPERES CONTROL or remote I-PROGRAM signal.

Output Meters

WARNING! To avoid the risk of shock and personal injury, Wait at least 5 minutes after disconnecting the AC mains power before removing top cover to gain access to analog meters

CAUTION! Units equipped with analog meters are shipped from the factory with a protective shorting jumper across the terminals of each meter. These



jumpers must be removed prior to power supply operation.

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 ("DM" OPTION ONLY)

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 kilovolt-meter 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 programming). 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 push-button. 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 > 6kV

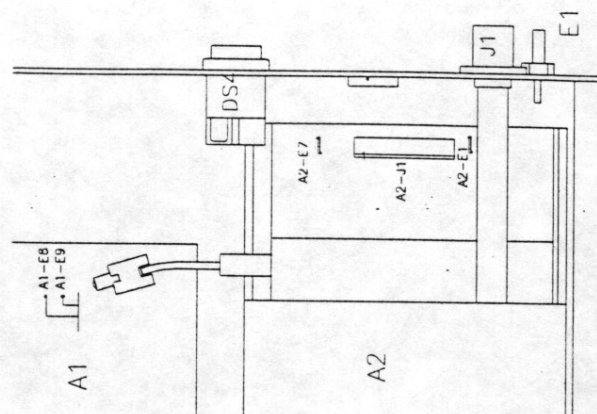
For reversible polarity models, the power supply has been shipped with two high voltage assemblies, one positive and one negative. One module is mounted in the chassis, the other one is shipped separately. A label on each high voltage assembly indicates its polarity. To reverse the polarity of the power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

WARNING! To avoid the risk of shock and personal injury, Wait at least 5 minutes after disconnecting the AC mains power before removing any covers or panels.

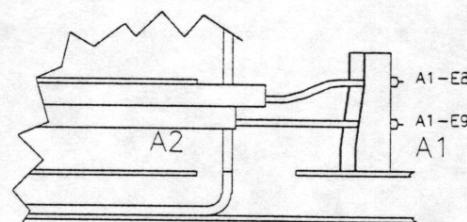
1. Remove the top cover from the unit. **BE SURE AC POWER IS DISCONNECTED AND HV IS DISCHARGED!**



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-E8 & 9 on the main board A1 (APD-ER).



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-P1, A2-E7 & A2-E1 to the high voltage module and connect the high voltage wires to A1-E8 & 9 of A1.



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

5. Replace the top cover.

POLARITY REVERSAL - MODELS 6kV 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 5 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 push-button 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 com-



mon) 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

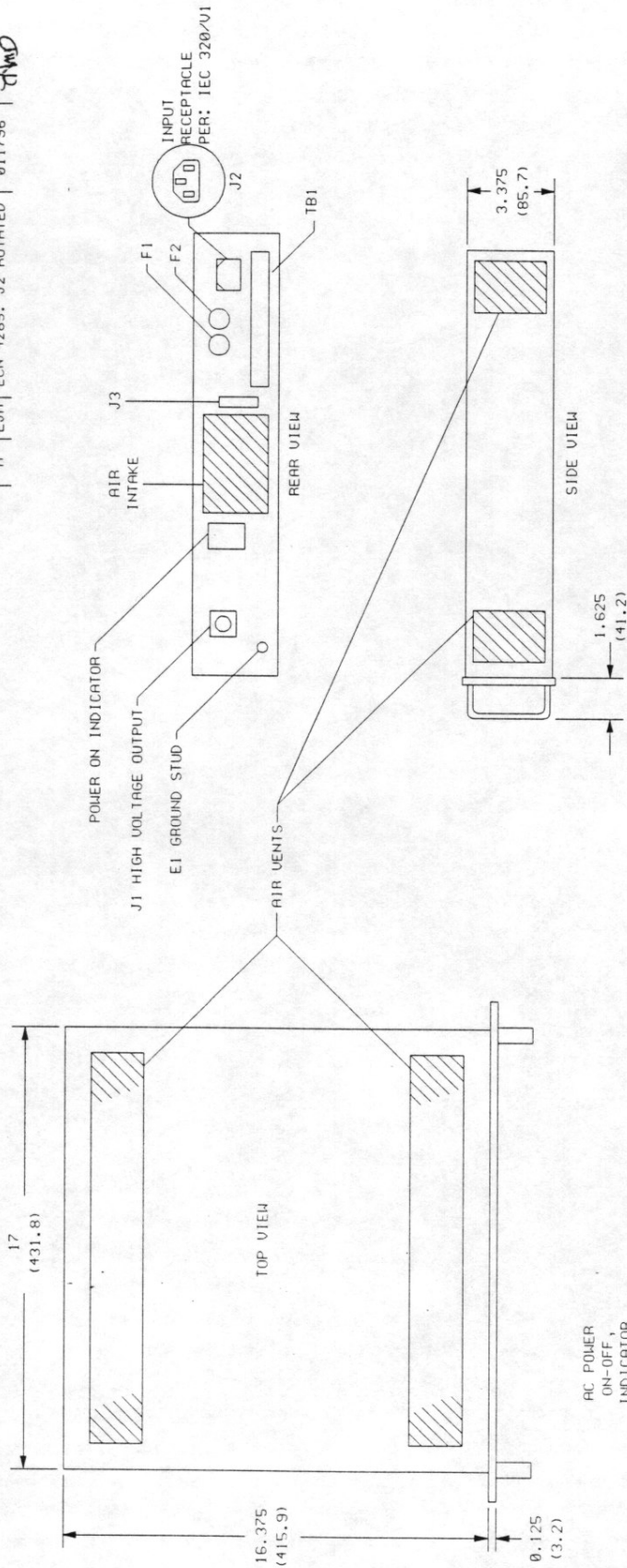
This terminal is reserved for special options or future expansion of features.

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
A	EJM	ECN 4285; J2 ROTATED	011796	<i>Handwritten Signature</i>



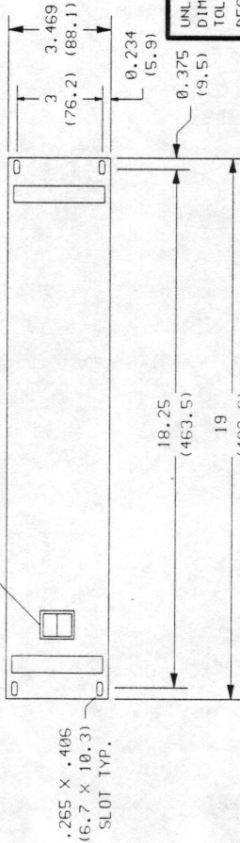
J3 LEGEND* (25 PIN D-SUB)

1	1-MONITOR	14	COMMON
2	U-MONITOR	15	COMMON
3	HV ENABLE	16	COMMON
5	U-PROGRAM	17	COMMON (TTL)
8	COMMON	18	COMMON

* - NO CONNECTION ON UNDESIGNATED PINS

TB1 LEGEND

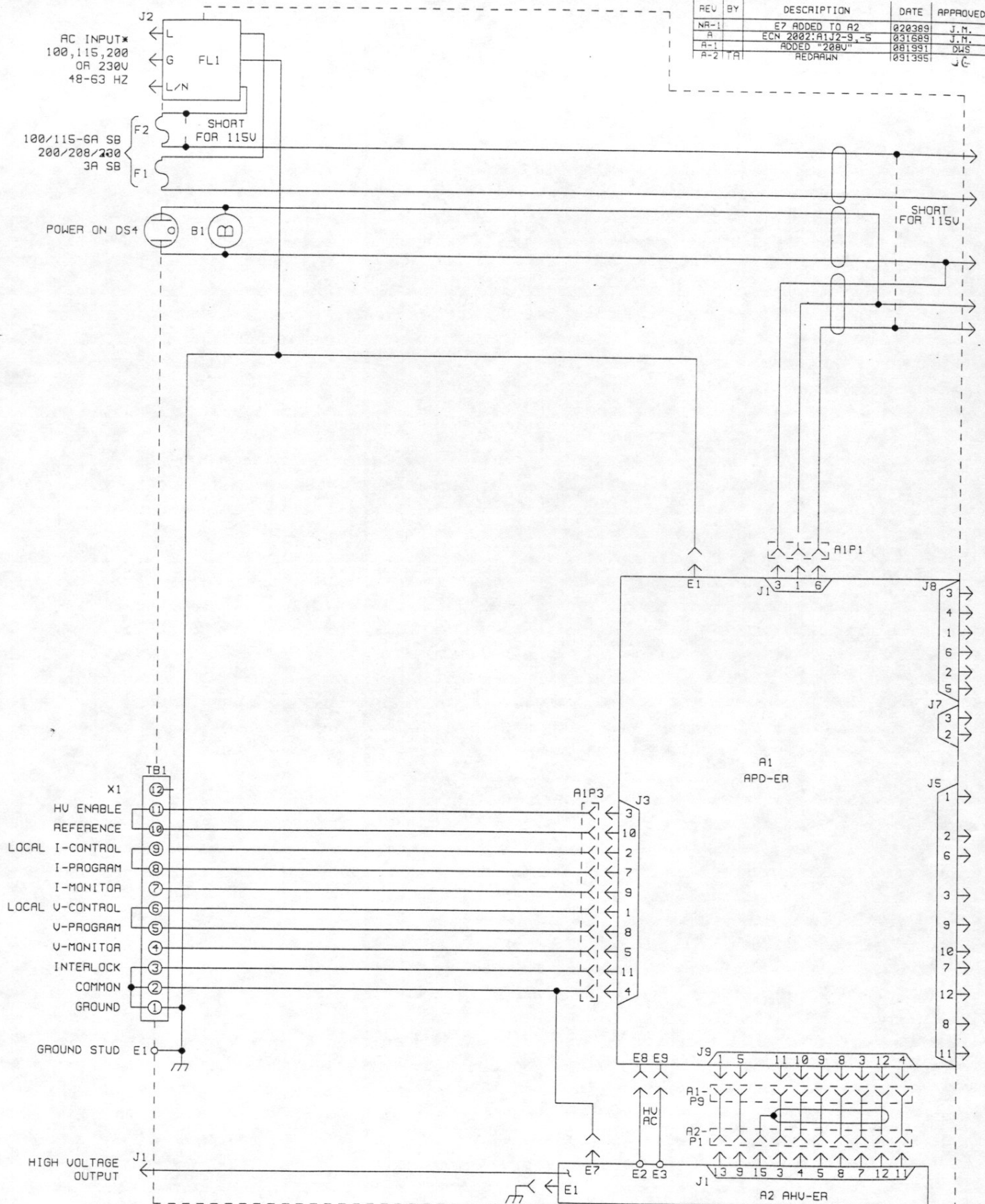
1	GROUND	9	REFERENCE
2	COMMON	10	REFERENCE
3	INTERLOCK	11	HV ENABLE
4	U-MONITOR	12	X1
5	U-PROGRAM		
6	NOT USED		
7	I-MONITOR		
8	I-PROGRAM		



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		FILE NO.	EXTENSION	GLASSMAN HIGH VOLTAGE, INC. P.O. BOX 551, WHITEHOUSE STATION, N.J. 08889 (908) 534-9007 FAX (908) 534-5672	
DEC. XXX ±	XX ±	APPROVALS	DATE	TITLE OUTLINE AND INSTALLATION SERIES ER	
DEG. ±	%	DRAWN DRO	112995	AM3-ER-3-B, Y75 OPTION	
MATERIAL		CHECKED DWS	121595	REV. A	
FINISH		RELEASED		DWG. NO. 201103-043	
DO NOT SCALE DRAWING				SCALE 1 OF 1	

REDUCED ONLY

REV	BY	DESCRIPTION	DATE	APPROVED
NR-1		E7 ADDED TO A2	020389	J.M.
A		ECN 2002: A1J2-S, -5	031689	J.M.
A-1		ADDED "200V"	081991	DWS
A-2	T.A.	REDRAWN	091395	J.C.



* REFER TO REAR PANEL LABEL
FOR SPECIFIC INPUT VOLTAGE.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: DEC. XXX ⁺ XX ⁺ DEC. %	FILE NO.	EXTENSION	GLASSMAN HIGH VOLTAGE, INC. P.O. BOX 551, WHITEHOUSE STATION, N.J. 08899 (908) 534-9007 FAX (908) 534-5672
	APPROVALS	DATE	
MATERIAL	DRAWN MES	011989	TITLE
FINISH	CHECKED JJC111	011989	SCHEMATIC DIAGRAM MAIN ASSEMBLY AM3-ER-1
DO NOT SCALE DRAWING	RELEASED		DWG. NO.
			300061-001
			REV. A-2
			SCALE NONE
			SHEET 1 OF 1

AM3-ER-1-B, Y75 OPTION

This assembly is the same as AM3-ER-1 (schematic # 300061-001), with the following schematic modifications:

1. J3, a 25 pin male D-Sub connector is added and wired as follows:
 - a) Pin 1 is wired to I-MONITOR.
 - b) Pin 2 is wired to V-MONITOR.
 - c) Pin 3 is wired to HV ENABLE.
 - d) Pin 5 is wired to V-PROGRAM.
 - e) Pins 8, 14, 15, 16, 17 & 18 are wired to COMMON.
2. The connection from TB1-5 to TB1-6 is broken.
3. The connection from TB1-10 to TB1-11 is broken.
4. TB1-9 is relabeled "REFERENCE".
5. TB1-6 is relabeled "NOT USED".

REVISIONS				GLASSMAN HIGH VOLTAGE, INC.			
DESCRIPTION	CHK	DATE	LTR	FILE:	SCHEMATIC MODIFICATION		
				TXTSCHM\ 30061001 .15	MAIN ASSEMBLY <u>AM3-ER-1-B, Y75 OPTION</u>		
					REFER TO DWG 300061-001		
				DRWN DAS	DATE 051195	DWG. NO. 300061-001-115	REV. NR
				CHK <i>[Signature]</i>	DATE 051195	SHEET 1 OF 1	

REV	BY	DESCRIPTION	DATE	APPROVED
NR-1		ADDED DA SERIES AND NOTE TO FIGURE 2	1/20/80	
A		REVISED FIGURE 2	03/03/81	
B		REVISED FIGURE 2	03/03/81	
B-1	TH	CRD CONNECTION	03/17/85	

FIGURE 1

REMOTE HV ENABLE

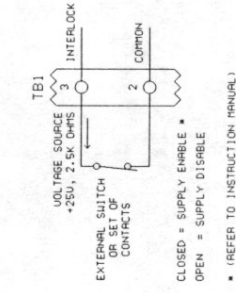


FIGURE 2

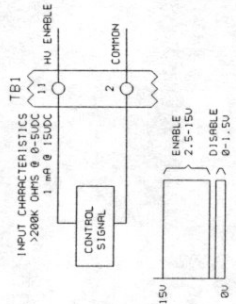


FIGURE 3

VOLTAGE PROGRAM

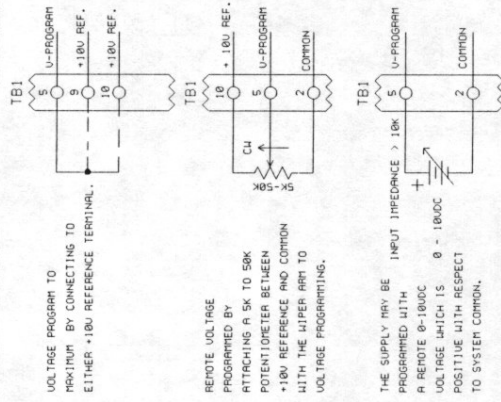


FIGURE 4

CURRENT PROGRAM

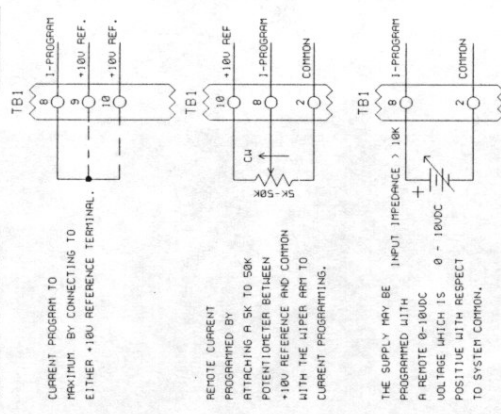


FIGURE 5

VOLTAGE MONITOR

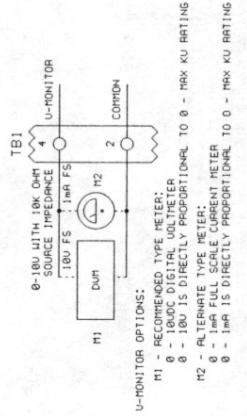
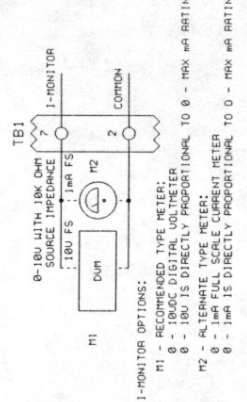


FIGURE 6

CURRENT MONITOR



COMMON AND GROUND

SYSTEM COMMON AND GROUND ARE NORMALLY TERMINATED TOGETHER, IN THIS CONFIGURATION, SIGNAL RETURNS AND LOAD RETURN CAN BE CONNECTED EITHER TO GROUND OR COMMON.

FIGURE 7

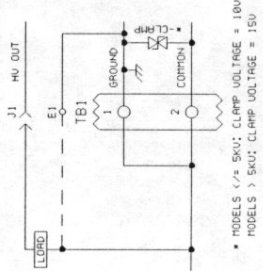


FIGURE 8

A TYPICAL ER OR EW INSTALLATION

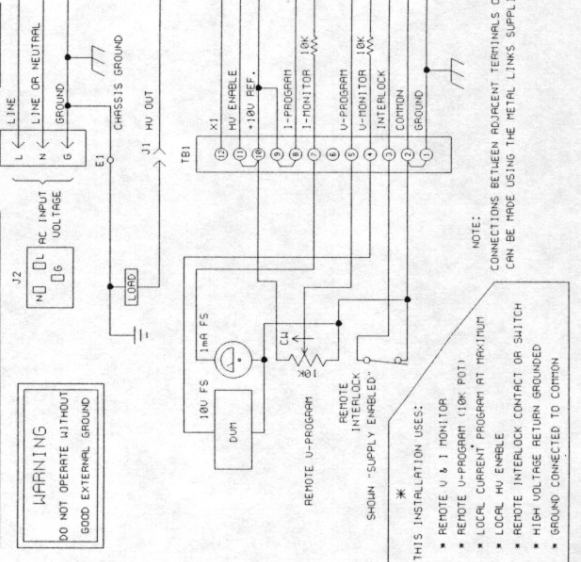
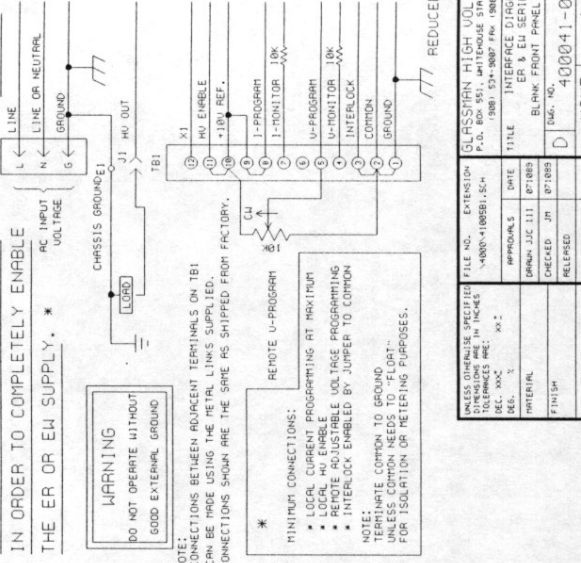


FIGURE 9

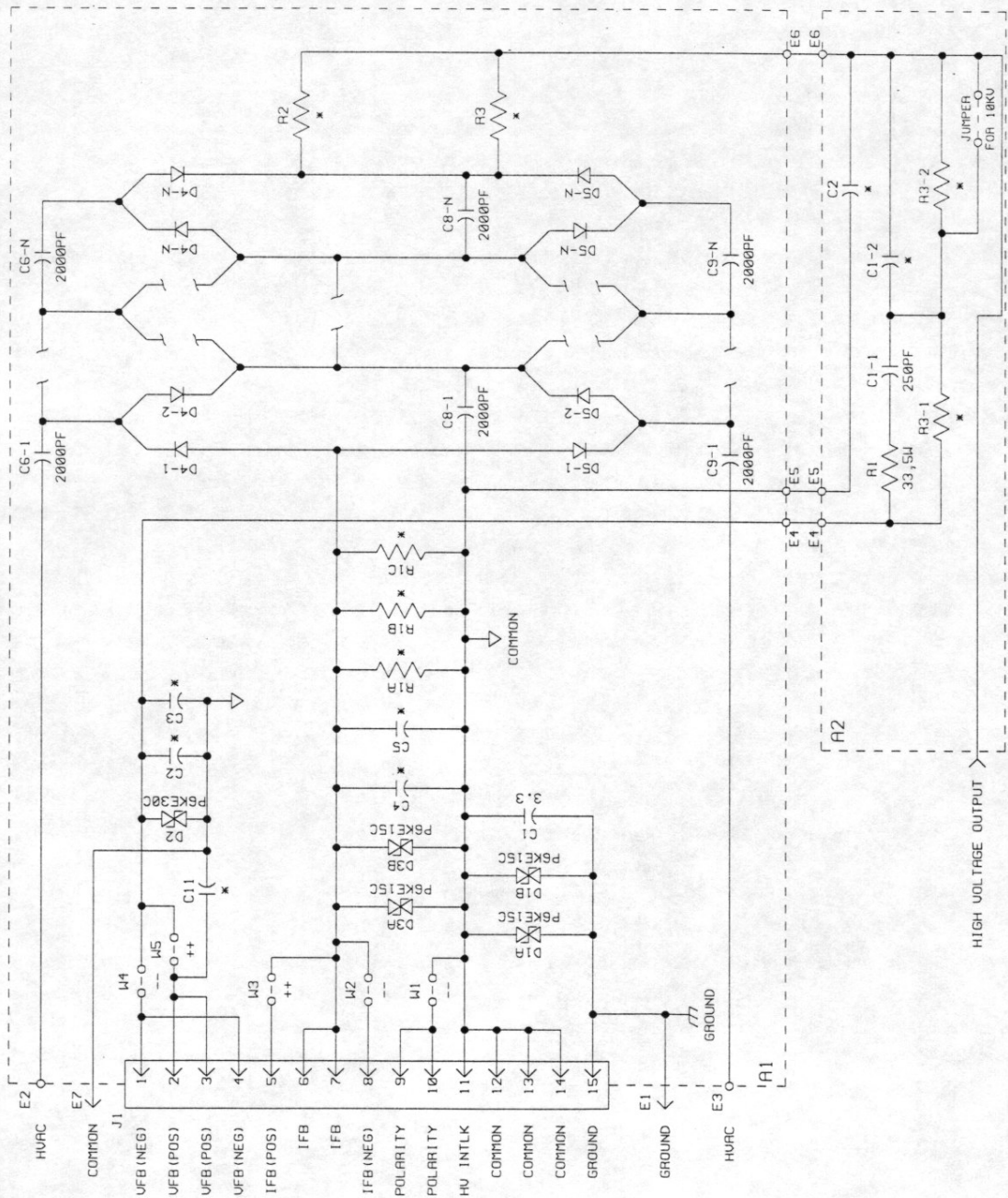
MINIMUM NUMBER OF CONNECTIONS IN ORDER TO COMPLETELY ENABLE THE ER OR EW SUPPLY.



TO "FLIRT" 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 FLORING WITH RESPECT TO GROUND. SINCE COMMON IS INTERNALLY CLAPPED TO GROUND WITH A BIDIRECTIONAL ZENER, THE DROP ACROSS THE SHUNT SHOULD BE < 5.0 V TO MAINTAIN ACCURACY.

UNLESS OTHERWISE SPECIFIED	FILE NO.	EXTENSION	GLASSMAN HIGH VOLTAGE, INC.
STANDARD ARE IN INCHES	P.O. BOX 581, WHITEHOUSE STATION, N.J. 08886		
SEC. NO.	1000-110001-151		
DATE	07/11/83		
APPROVALS	DATE	11/11	INTERFACE DIAGRAM
DESIGNED BY	07/11/83		ER & EW SERIES
CHECKED BY	07/11/83		BLACK FRONT PANEL OPTION
RELEASED			
FINISH			
SCALE	NONE	SHEET 1 OF 1	

REV	BY	DESCRIPTION	DATE	APPROVED
A		ECN 2227: 2002 => J, 150P REMOVED	10/1/89	DAS
B		ECN 2046: C7 & C10 OUT	02/27/95	JIC111
C	HDS	ECN 5240: 2011 LMS 2U	05/05/97	<i>CPA</i>



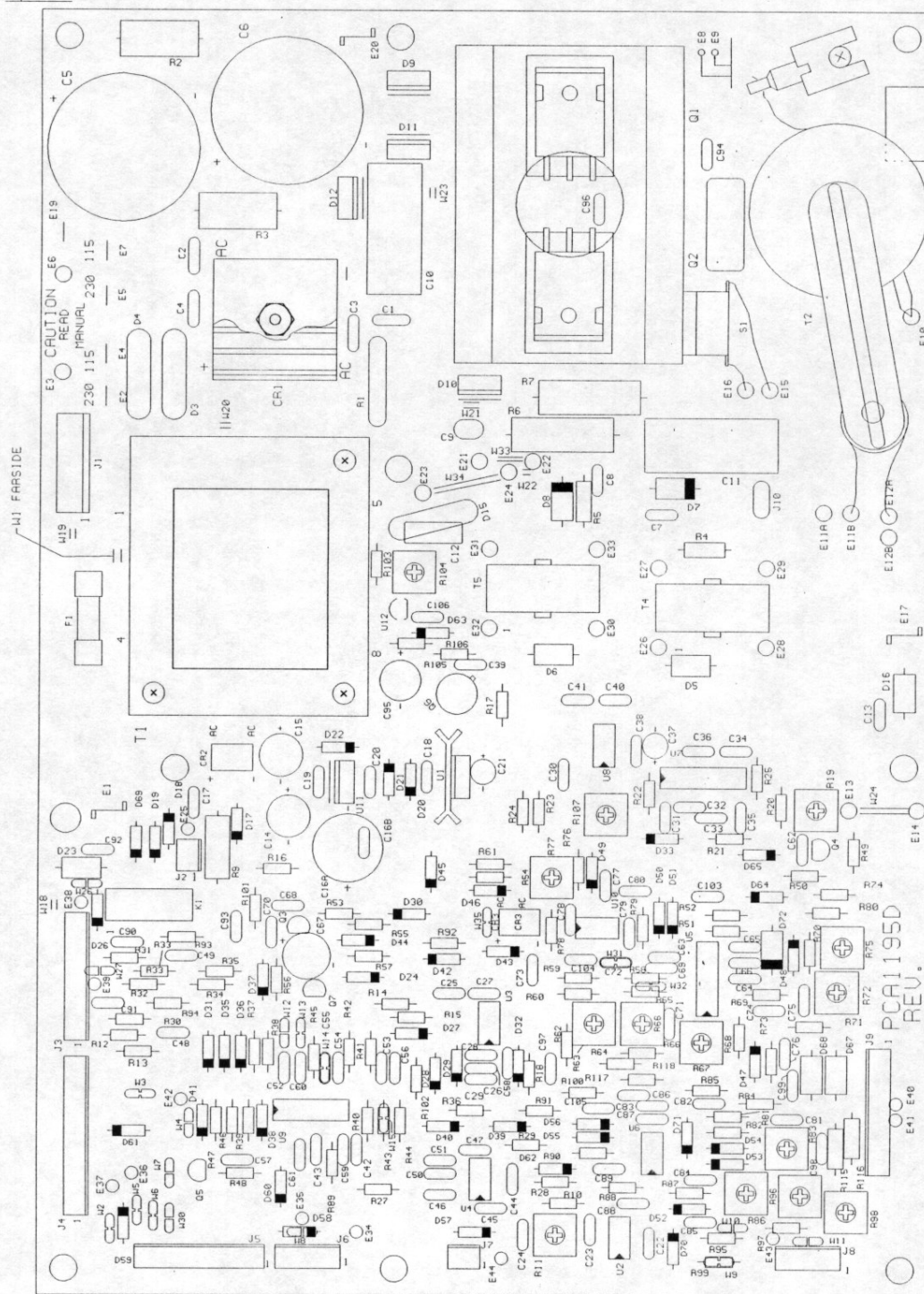
REDUCED ONLY

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

FILE NO.	EXTENSION	UNLESS OTHERWISE SPECIFIED TOLERANCES ARE IN INCHES
N3000N64001C.SCH		DEC. XXX. XX.
APPROVALS	DATE	TITLE
DRAWN RES	02/13/95	SCHEMATIC DIAGRAM
CHECKED J.M.	02/14/95	HIGH VOLTAGE ASSEMBLY
RELEASED		REV. C
DO NOT SCALE DRAWING		
SCALE	NONE	SHEET 1 OF 1

GLASSMAN HIGH VOLTAGE, INC.
 P.O. BOX 551, WHITEHOUSE STATION, N.J. 08089
 (908) 534-3807 FAX (908) 534-5672

REV	BY	DESCRIPTION	DATE	APPROVED



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE : DEC. XXX + XX + DEG. +		FILE NO. EXTENSION \PCB1\195032#.PCB	APPROVALS DRAWN TJM 090199 CHECKED <i>[Signature]</i> 090199 RELEASED	DATE TJM 090199	TITLE PARTS PLACEMENT APD-ER/MP,CE,IEC	REV. B	Dwg. NO. PCA1195-032	SCALE NONE	SHEET 1	OF 1
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DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

SSP

GLASSMAN HIGH VOLTAGE, INC.
 P.O. BOX 551, WHITEHOUSE STATION, N.J. 08859
 (800) 534-5007 FAX (800) 534-5672

