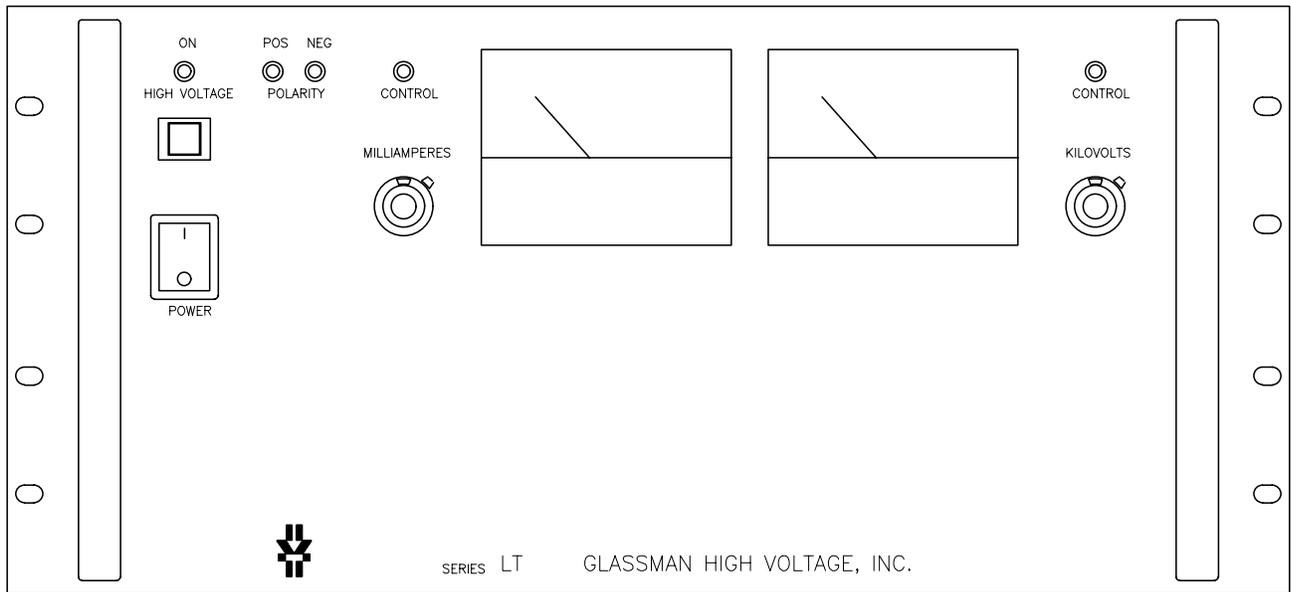


INSTRUCTION MANUAL

LT/LX SERIES



 *Innovations in high voltage power supply technology.*
GLASSMAN HIGH VOLTAGE INC.
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High Bridge, NJ 08829
(908) 638-3800 * FAX (908)638-3700 * www.GlassmanHV.com

TABLE OF CONTENTS

LT & LX SERIES

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, Inspection, and Correspondence	2
Safety	3
Connections/Controls Description	4
Rear Panel	4
Front Panel	6
Installation and Operation	8
Initial Turn On	8
Polarity Reversal	10
Supplies Greater Than 6kV	10
Supplies Equal to or Less Than 6kV	12
Remote Control Interface	13
SECTION III. SCHEMATIC AND ASSEMBLY DRAWINGS	

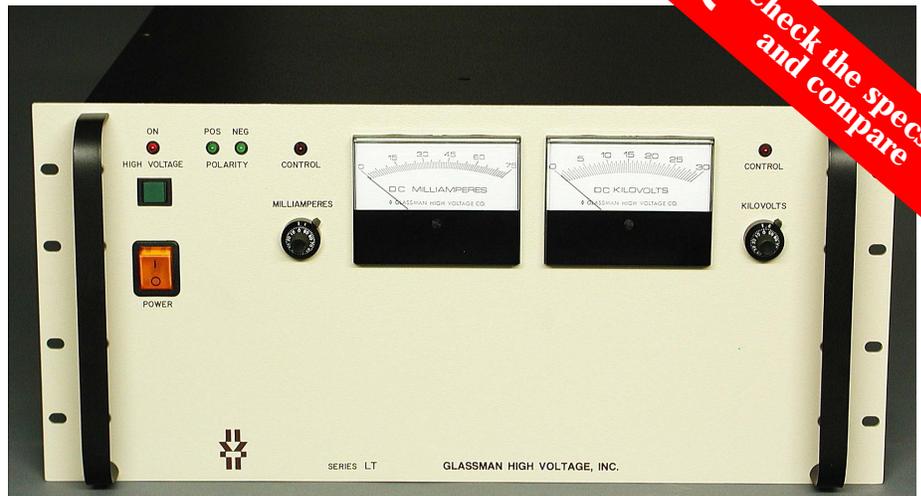
LT Series 2000 Watt Regulated High Voltage DC Power Supplies

Up To 150 kV...
8.75 Inch
Panel Height

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 150 kV.

The LT Series are 2000 watt sophisticated, well-regulated, high voltage DC power supplies. Rack-panel height is only 8.75 inches. The LT is offered with dual analog voltage and current meters or, optionally, with dual digital meters or a blank panel for OEM/systems applications.

Features:

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

Air Insulated. The LT 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 less than 0.03% 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 0.05% 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.

Small Size and Weight. LT Series power supplies occupy only 8.75 inches of panel height. Net weight is less than 47 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

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Specifications

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

Input: 198-264 V RMS, single-phase, 48-63 Hz, <20 A. A 3-position terminal block with protective cover is provided.

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. Voltage accuracy is 0.5% of setting + 0.2% of rated. Repeatability is <0.1% of rated.

Stored Energy: <15 Joules, 60 kV; <30 Joules, 125 kV.

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

Ripple: <0.03% of rated voltage + 1 V RMS at full load (0.1% for 150kV).

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 to 60 kV (400 ms for higher voltages) 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.

Accessory: Detachable 8-foot HV cable. See Models chart for cable type.

Remote Controls: Terminal block is provided for all remote functions, including common, +10 V reference, interlock, voltage and current program/monitor, HV Enable/Disable, ground, and local control.

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.

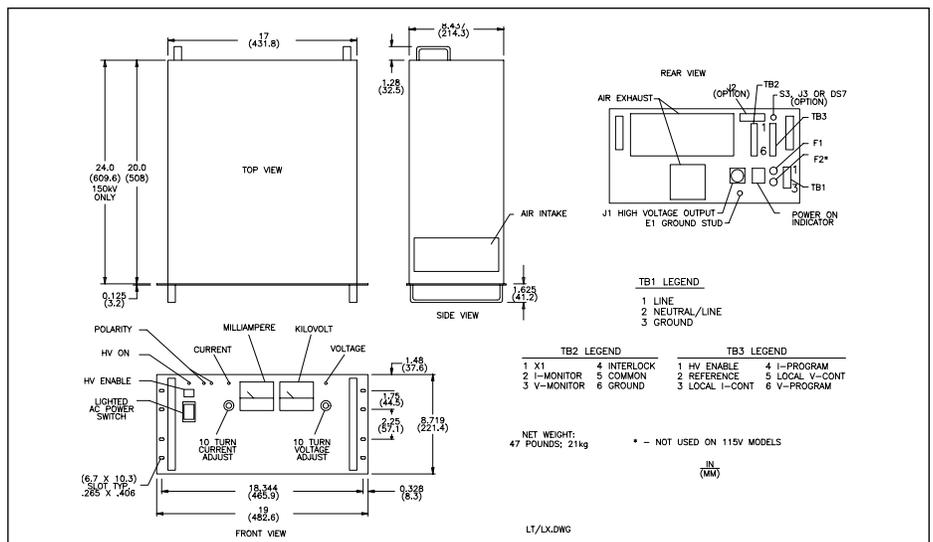
Options

Symbol Description

- 200 200 V ± 10% input, 48-63 Hz.
Derate currents by 10%, maximum 1800 W.
- 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 30 s +/- 20%
- 5VC 0-5 V voltage and current program/monitor.

Models

Positive Polarity	Negative Polarity	Reversible Polarity	Output Voltage	Output Current	Output Cable	Panel Height
Reversible Polarity Only			LT1R2000	0-1kV	0-2000mA	RG-59 8.75 in.
			LT1.5R1300	0-1.5kV	0-1300mA	RG-59 8.75 in.
			LT2R1000	0-2kV	0-1000mA	RG-59 8.75 in.
			LT3R660	0-3kV	0-660mA	RG-59 8.75 in.
			LT5R400	0-5kV	0-400mA	RG-59 8.75 in.
			LT6R330	0-6kV	0-330mA	RG-58 8.75 in.
LT8P250	LT8N250	LT8R250	0-8kV	0-250mA	RG-8U 8.75 in.	
LT10P200	LT10N200	LT10R200	0-10kV	0-200mA	RG-8U 8.75 in.	
LT12P165	LT12N165	LT12R165	0-12kV	0-165mA	RG-8U 8.75 in.	
LT15P132	LT15N132	LT15R132	0-15kV	0-132mA	RG-8U 8.75 in.	
LT20P100	LT20N100	LT20R100	0-20kV	0-100mA	RG-8U 8.75 in.	
LT30P66	LT30N66	LT30R66	0-30kV	0-66mA	RG-8U 8.75 in.	
LT40P50	LT40N50	LT40R50	0-40kV	0-50mA	RG-8U 8.75 in.	
LT50P40	LT50N40	LT50R40	0-50kV	0-40mA	RG-8U 8.75 in.	
LT60P33	LT60N33	LT60R33	0-60kV	0-33mA	RG-8U 8.75 in.	
LT80P25	LT80N25	LT80R25	0-80kV	0-25mA	DS 2124 8.75 in.	
LT100P20	LT100N20	LT100R20	0-100kV	0-20mA	DS 2124 8.75 in.	
LT125P16	LT125N16	LT125R16	0-125kV	0-16mA	DS 2121 8.75 in.	
LT150P10	LT150N10	LT150R10	0-150kV	0-10mA	DS 2121 8.75 in.	



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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

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.

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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 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

AC POWER INPUT TB1

WARNING! The ground (TB1-3) terminal of this input should be connected to the AC outlet ground or other good earth ground.

A terminal block, TB1, is provided on the rear panel of the supply for connection to AC power. The power cord employed should contain wires capable of supplying at least 20 amperes RMS each.

The wires should be connected as follows:

TB1-1	LINE
TB1-2	NEUTRAL (115V) or LINE
TB1-3	GROUND

It is recommended that some means be provided for disconnecting the unit(s) from the mains such as an appropriate plug/jack combination or a distribution box with safety switch or circuit breaker.

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.

AC POWER FUSE(S) F1 & F2

The fuse holder(s) are located on the rear panel of the supplies, one for each AC line



(F2 is not present on standard LX supplies because of the 115V neutral). The following procedure can be used to check or replace a fuse:

1. Disconnect the power source from the unit.
2. Press in and slightly rotate the fuse holder cap counterclockwise to release it.
3. Pull the cap (with attached fuse) out of the fuse holder.
4. Check the fuse and obtain replacement if needed (REPLACE WITH SAME TYPE ONLY).
5. Reinstall the fuse (or replacement fuse) and the fuseholder cap.

HIGH VOLTAGE OUTPUT J1

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

Engage the connector as follows:

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

UNITS <= 6kV: Align plug, push in and rotate clockwise 1/2 turn to engage.

GROUND STUD E1

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).

REMOTE CONTROL CONNECTORS TB2 & TB3

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

These connectors provide inputs and outputs for the remote control functions. For a description of each of these signals and their applications see Figures 1-9 and the remote control interface section of this manual.

OPTIONAL J2, E2, & S3

Reserved for special options.

FRONT PANEL ELEMENTS

POWER Switch/Indicator

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

This switch applies AC power to the unit when in the on ("1") position (as long as power is present at TB1). The integral lamp will illuminate when power is present.

NOTE: THE FOLLOWING FRONT PANEL ELEMENTS ARE NOT PRESENT ON "NC" OPTION MODELS.

HIGH VOLTAGE ON Pushbutton

When depressed, activates the high voltage enable circuit (as indicated by the HIGH VOLTAGE ON indicator) if the INTERLOCK signal is closed. The supply will not generate high voltage unless/until a valid "on" signal is present at the HV ENABLE input (see "REMOTE CONTROL INTERFACE" section for details).

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

USERS WITH LX SERIES SUPPLIES: MILLIAMPERE CONTROL indicator also will illuminate when the supply is in maximum power limiting condition.

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

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.)

USERS WITH "DM" OPTION SUPPLIES: 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 ALSO MUST BE GROUNDED TO TB1-3.

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 E1 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 identification label 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 TB3 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 to the load and ground the return lead of the load as shown in Figure 7. Connect the high voltage output 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 to 10VDC = 0 to rated kV output).

5. Connect the AC input cable from TB1 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 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.

- 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.

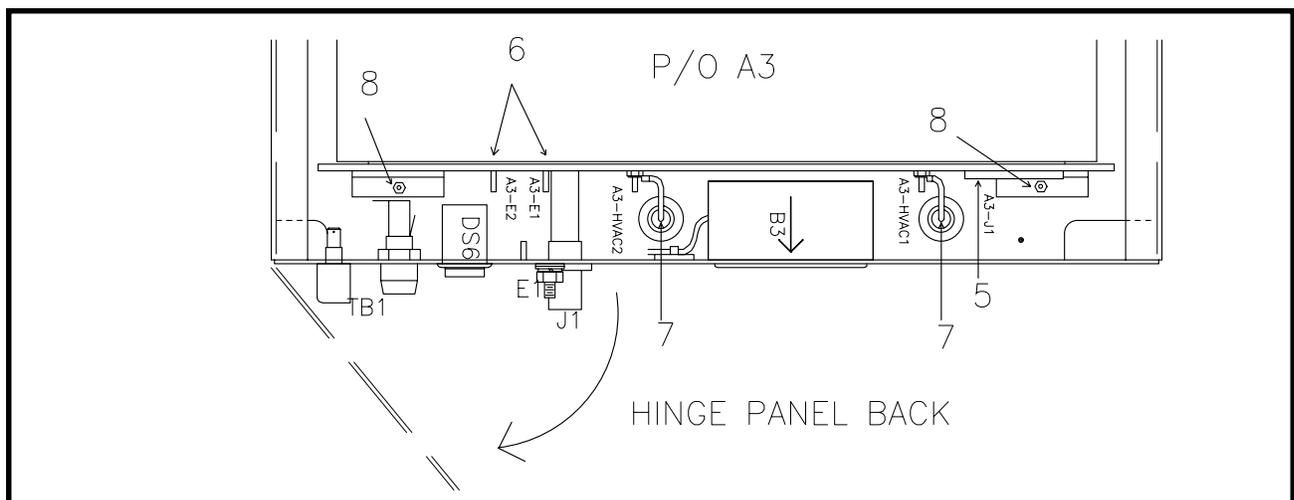
POLARITY REVERSAL

REVERSIBLE POLARITY MODELS > 6kV

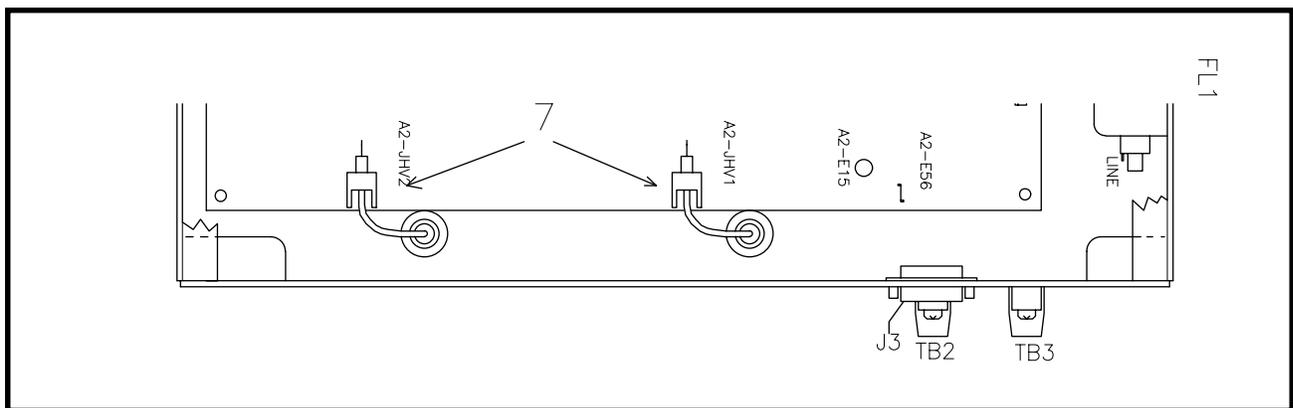
For reversible polarity models, the power supply has been shipped with two high voltage assemblies; one positive and one negative. One assembly is mounted in the chassis and the other one is shipped separately. A label on each high voltage assembly indicates its polarity. To reverse the polarity of the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

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.

- BE SURE AC POWER IS DISCONNECTED AND HV IS DISCHARGED!**



2. Flip unit over, bottom side up with rear of unit facing you.
3. Remove the 10 screws holding the bottom cover to the unit.
4. Remove the 8 screws holding the rear panel to the chassis. "Hinge" the rear panel to provide access to the HV modules connectors.
5. Unplug the 12 pin electrical connector from A3-J1 on the high voltage assembly presently installed.
6. Disconnect the 2 push lug connections to A3-E1 (green wire) and A3-E2 (black wire).



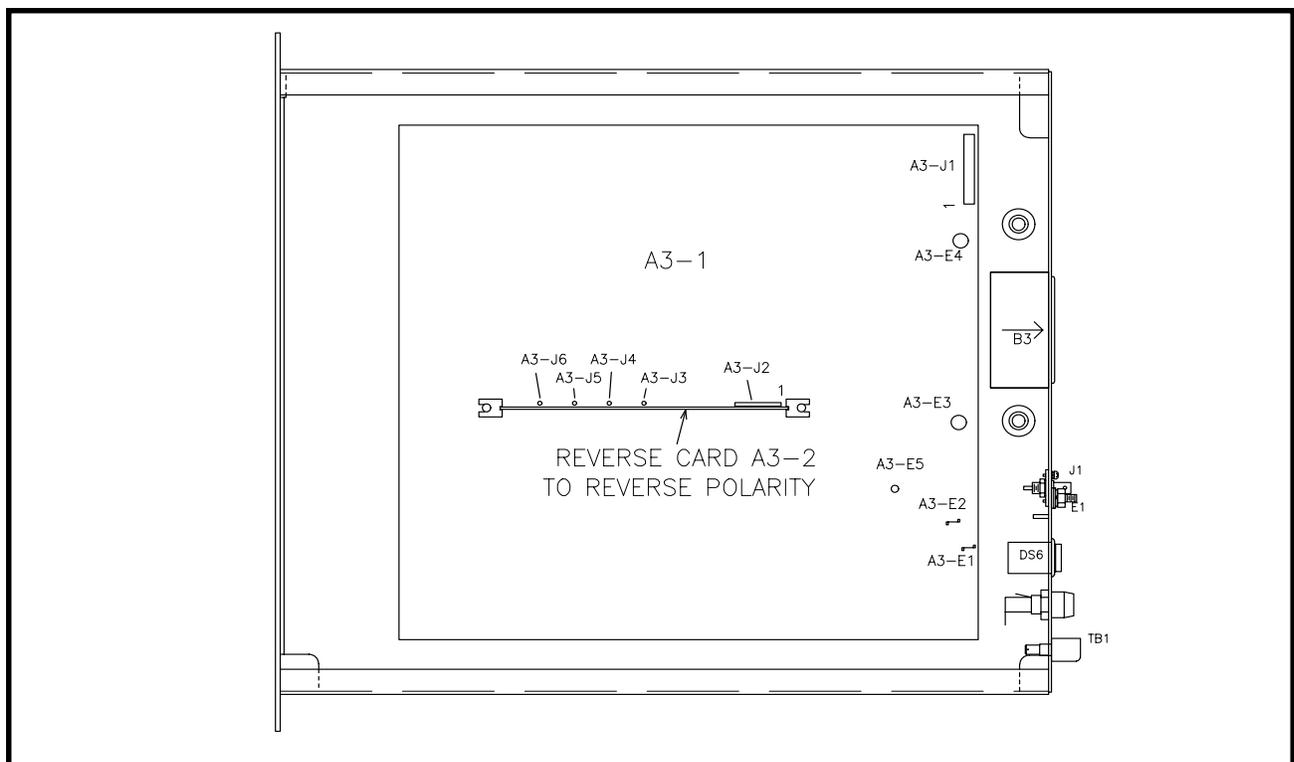
7. Carefully unplug the 2 HV wires that are fed to the upper section (which is now the bottom) through plastic tubes from A2-JHV1 & A2-JHV2.
8. Remove the two nuts holding the HV assembly to the chassis.
9. Interchange the two high voltage assemblies. Reinstall the 2 nuts that hold the HV module to the chassis basepan.
10. Reconnect the electrical connector, HV wires, and push lug connections. **WARNING! For continued safety, the push lug connections must be reinstalled!**
11. Reattach the rear panel and cover.

ALL 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. **BE SURE AC POWER IS DISCONNECTED AND HV IS DISCHARGED!**
2. Flip unit over, bottom side up with rear of unit facing you.
3. Remove the 10 screws holding the bottom cover to the unit.
4. Locate the polarity card A3-2 plugged into the high voltage board A3-1 and observe that the card is labeled to indicate the installed polarity.





5. If it is desired to change the polarity of the supply, simply unplug the card, flip it over and reinstall carefully.
6. Replace the bottom cover.

REMOTE CONTROL INTERFACE

NOTE: All "Figures" mentioned hereafter may be found on the INTERFACE DIAGRAM located in SECTION III of this manual.

User Interface Connectors TB2 & TB3

GROUND TB2-6

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. TB2-6 is normally connected to the adjacent COMMON terminal unless a floating COMMON is desired (see TB2-5). If a floating COMMON is employed, E1 should be used as the load return (see Figure 7).

COMMON TB2-5

This terminal is the instrumentation/measurement return. Normally, COMMON is maintained at ground potential via a jumper to the GROUND terminal. In this configuration, instrument returns and the load return may be connected to either COMMON or GROUND. If desired, the user may remove this jumper and allow 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 internally clamped (with diodes) to GROUND. Thus, the inserted drop should not exceed 300mV 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).

INTERLOCK TB2-4

This terminal must be connected to COMMON to enable the supply. If desired, the jumper may be removed and replaced by an external switch. This switch 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 (see Figure 1).

NOTE: "NC" option supplies will re-enable immediately.

V-MONITOR TB2-3

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 is used to monitor this output. It is also acceptable to use a 1mA DC full scale instrument (e.g., analog meter) for monitor purposes (see Figure 5).

V-PROGRAM TB3-6**LOCAL V-CONTROL TB3-5****"NC" OPTION: NO CONNECTION TB3-5**

A positive 0-10V signal (with respect to COMMON) at TB3-6 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 (10-50k 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 TB3-5, 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.

I-MONITOR TB2-2

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 is used to monitor this output. It is also acceptable to use a 1mA DC full scale instrument (e.g., analog meter) for monitor purposes (see Figure 6).

I-PROGRAM TB3-4**LOCAL I-CONTROL TB3-3**

A 0-10V positive signal (with respect to COMMON) at TB3-4 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 (10-50k 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 TB3-3, adjusted by the local (front panel) MILLIAMPERES CONTROL.

USERS WITH "NC" OPTION SUPPLIES: No local control is provided. Instead, an additional REFERENCE is provided at TB2-3.

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

REFERENCE TB3-2 ("NC" OPTION: TB3-3 ALSO)

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.

HV ENABLE TB3-1

This terminal must be connected to a positive 2.5-10V 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).

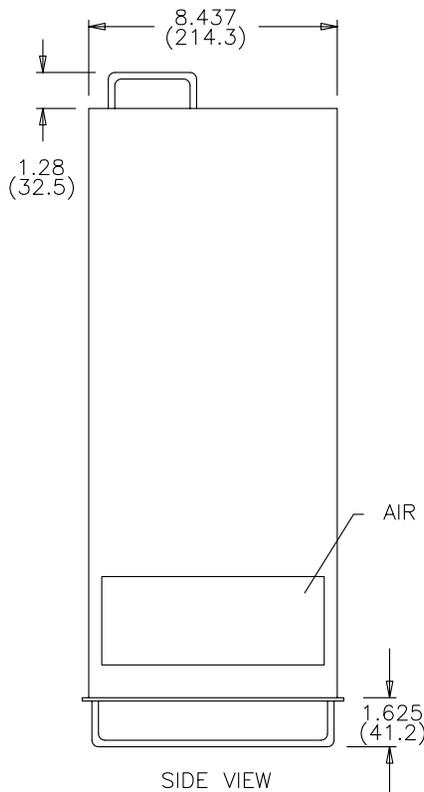
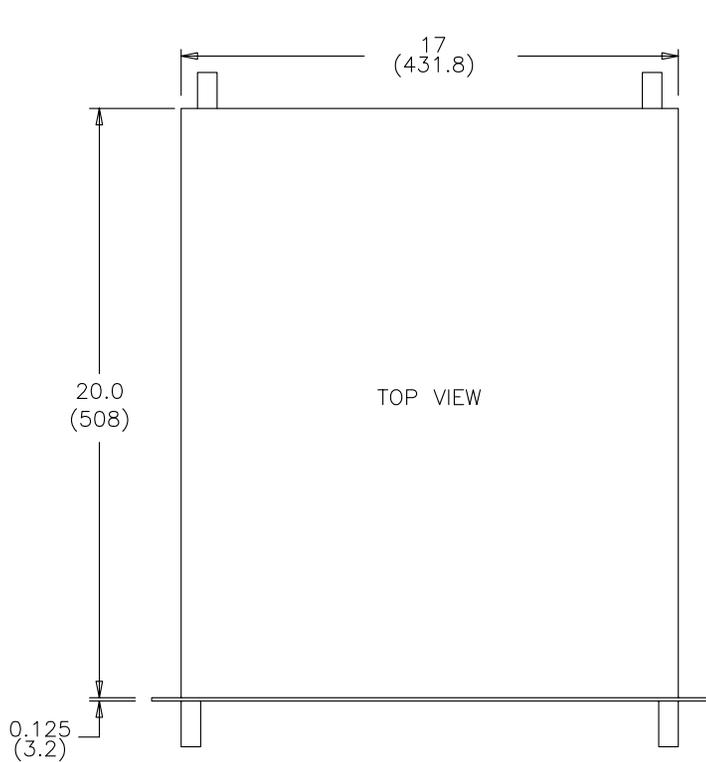
X1 TB2-1

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

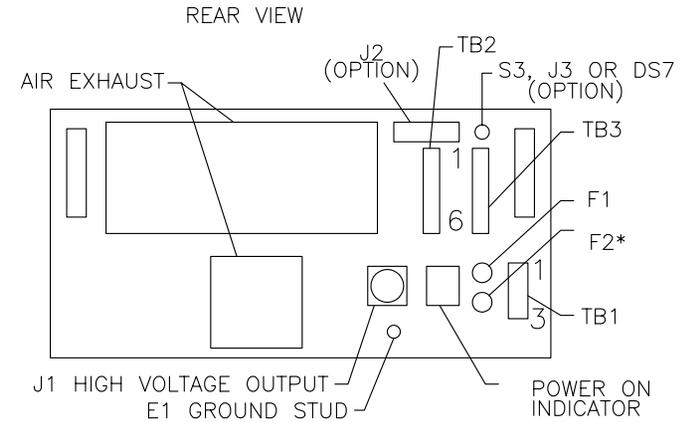
NOTE:

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		ADDED S3, J3, DS7 OPTION	102391	DWS
NR-2	MDS	REDRAWN	120397	JJCIII
NR-3	AH	DFX INTO .DWG	022601	



TB1 LEGEND

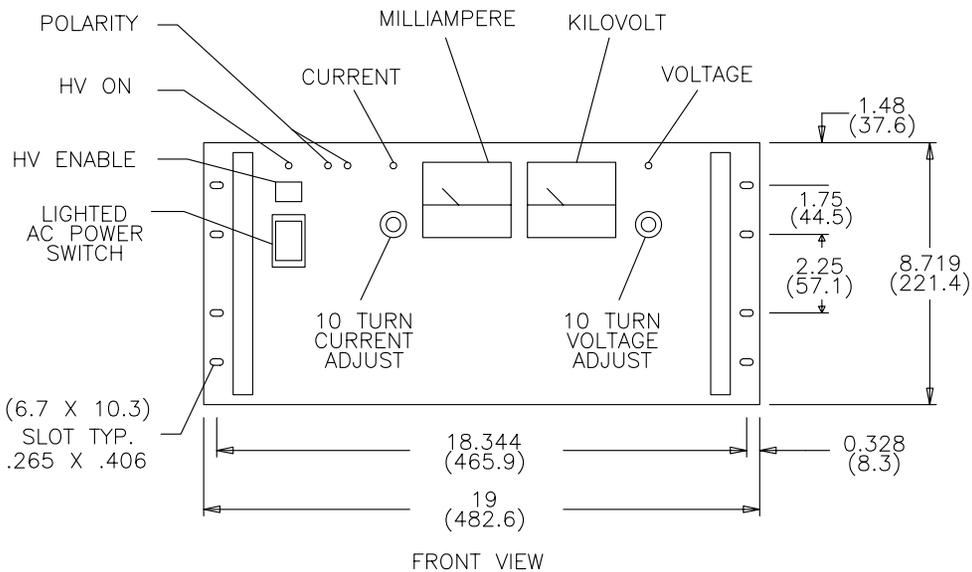
- 1 LINE
- 2 NEUTRAL/LINE
- 3 GROUND

TB2 LEGEND

- 1 X1
- 2 I-MONITOR
- 3 V-MONITOR
- 4 INTERLOCK
- 5 COMMON
- 6 GROUND

TB3 LEGEND

- 1 HV ENABLE
- 2 REFERENCE
- 3 LOCAL I-CONT
- 4 I-PROGRAM
- 5 LOCAL V-CONT
- 6 V-PROGRAM



NET WEIGHT:
47 POUNDS; 21kg

* - NOT USED ON 115V MODELS

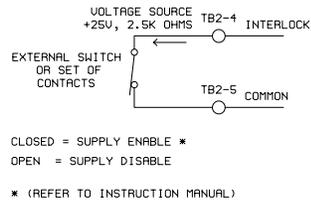
IN (MM)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE : DEC. XXX ± xx ± DEC. ±		FILE NO. EXTENSION \2011\90001-3.DWG	GLASSMAN HIGH VOLTAGE, INC. P.O. BOX 317, HIGH BRIDGE, NJ 08829 (908) 638-3800 FAX (908) 638-3700	
THIRD ANGLE PROJECTION		APPROVALS DATE DRAWN TA 040891	TITLE OUTLINE AND INSTALLATION SERIES LT/LX AM8-LT/LX, ANALOG	
DO NOT SCALE DRAWING		CHECKED JMC 040991	DWG.NO. 201190-001	REV. NR-3
		RELEASED	SCALE	SHEET 1 OF 1

REV	BY	DESCRIPTION	DATE	APPROVED
A		ECN 2948: FIG 6	080691	LB
B		ECN 3041: FIG'S 8 & 9	012492	DMS
C		ECN 3082: FIG 5	030592	DMS
C-1	AH	UPDATED ADDRESS	061683	

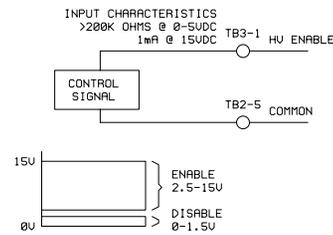
REMOTE INTERLOCK

FIGURE 1



REMOTE HV ENABLE

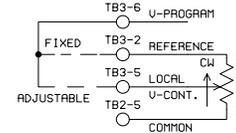
FIGURE 2



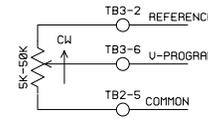
VOLTAGE PROGRAMMING

FIGURE 3

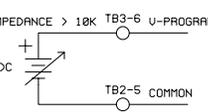
VOLTAGE PROGRAM TO MAXIMUM BY CONNECTING TO REFERENCE TERMINAL OR ADJUSTABLE BY CONNECTING TO LOCAL U-CONTROL TERMINAL.



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



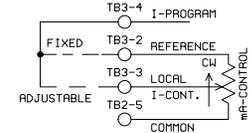
THE SUPPLY MAY BE PROGRAMMED WITH A REMOTE 0-10VDC VOLTAGE WHICH IS POSITIVE WITH RESPECT TO SYSTEM COMMON.



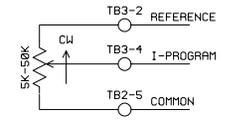
CURRENT PROGRAM

FIGURE 4

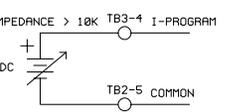
CURRENT PROGRAM TO MAXIMUM BY CONNECTING TO REFERENCE TERMINAL OR ADJUSTABLE BY CONNECTING TO LOCAL I-CONTROL TERMINAL.



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

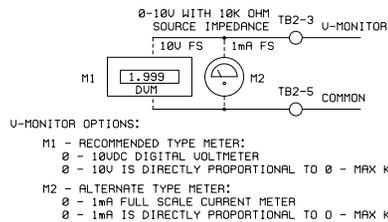


THE SUPPLY MAY BE PROGRAMMED WITH A REMOTE 0-10VDC VOLTAGE WHICH IS POSITIVE WITH RESPECT TO SYSTEM COMMON.



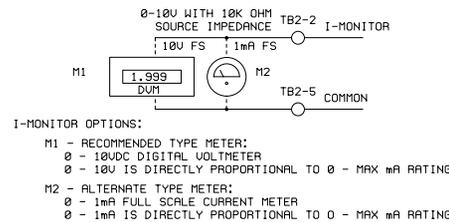
VOLTAGE MONITOR

FIGURE 5



CURRENT MONITOR

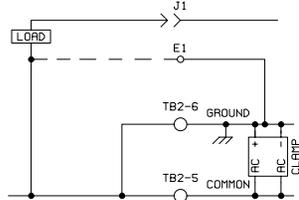
FIGURE 6



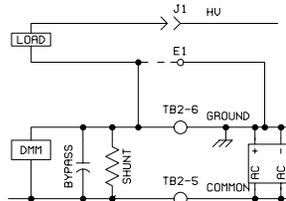
COMMON AND GROUND

FIGURE 7

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

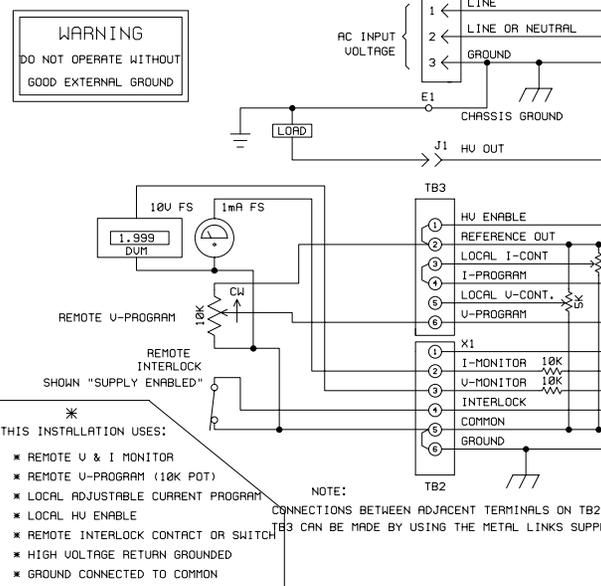


TO "FLOAT" COMMON FOR ISOLATION OR MEASUREMENT PURPOSES, REMOVE COMMON AND GROUND CONNECTION ON TB2. FOR THIS CONFIGURATION INSTRUMENT RETURNS MUST BE TIED TO COMMON, AND LOAD RETURN MUST BE CONNECTED TO GROUND. INSTRUMENT RETURNS MUST BE FLOATING WITH RESPECT TO GROUND. SINCE COMMON IS INTERNALLY CLAMPED TO GROUND WITH A BRIDGE RECTIFIER, THE DROP ACROSS THE SHUNT SHOULD BE < 300mV TO MAINTAIN ACCURACY.



A TYPICAL LT/LX INSTALLATION

FIGURE 8



MINIMUM NUMBER OF CONNECTIONS IN ORDER TO COMPLETELY ENABLE THE LT/LX SUPPLY.

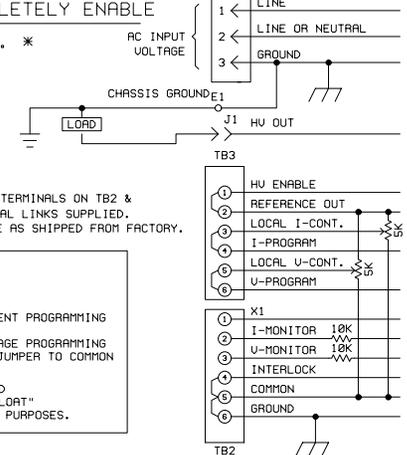
FIGURE 9

WARNING
DO NOT OPERATE WITHOUT GOOD EXTERNAL GROUND

NOTE:
CONNECTIONS BETWEEN ADJACENT TERMINALS ON TB2 & TB3 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 UNLESS COMMON NEEDS TO "FLOAT" FOR ISOLATION OR METERING PURPOSES.



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		FILE NO.	EXTENSION	GLASSMAN HIGH VOLTAGE, INC.	
DEC.	xxx	44000411013C1	SCH	P.O. BOX 317, HIGH BRIDGE, N.J. 08829	
DES.	z			(908) 638-3889 FAX (908) 638-3789	
MATERIAL	DRAWN MES	040891	DATE	TITLE INTERFACE DIAGRAM	
FINISH	CHECKED J.M.	040891	RELEASED	DWG. NO.	REV.
				400041-013	C-1
DO NOT SCALE DRAWING				SCALE NONE	SHEET 1 OF 1

REDUCED ONLY