Film-Tech

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XETRON®

XETRON/IREM POWER SUPPLIES

N3 & G3 TYPES

JULY 1983

XETRON CORPORATION, Ten Saddle Rd., Cedar Knolls, NJ 07927 U.S.A. Telephone (201) 267-8200

These power supplies are available to cover a wide range of power applications and are normally used to supply filtered direct current to short arc Xenon bulbs in motion picture equipment.

All units are designed to deliver the nameplate power on a continuous basis and with a nominal variation in line voltage. The units will deliver normal power with line voltages from 208 to 230 volts.

Output power is regulated by changing the magnetic flux coupling the primary and secondary transformer windings. This shunt is connected to a hand wheel and moved up and down to provide a continuously variable change in output.

All IREM power supplies are supplied with magnetic switches for ON/OFF control. See power supply schematics for circuit details and note that an extra set of contacts are provided for latching the switch in the on position and releasing when toggle switch RC is opened or the off switch depressed. Also in reference to this drawing, it will be observed that each primary consists of two coils in series and the three pair in a star connection. On the secondary side we have two primaries in parallel and each coil having a center top. These coils are also star connected and this permits the use of six identical diodes mounted on a common heat sink to be used. Each diode is shunted by a .22 mfd capacitor to bypass any switching transients that could damage the diode.

The power supplies use high reactance transformers to provide a suitable volt-ampere output characteristic. The no load voltage must be 80 - 120 volts when first energized and drop to approximately 25 volts, depending upon the size of the bulb, when the bulb ignites and starts to draw current. All Xenon power supplies have a large output capacitor whose discharge is very helpful in starting the initial current flow through the bulb.

The RA unit serves the special purpose of inserting a low value resistance in series with this capacitor so its charging and discharging peak currents will be reduced. After the bulb is ignited, the relay shorts out this resistor and permits the capacitor to do its normal filtering function. The bulb manufacturer recommends that the output current pulsation not exceed 10% peak to peak. The IREM units normally check less than this value.

It is very important that tight, clean connections be maintained and that the units be properly protected with fuses or circuit breakers. The technical data sheet provides the necessary information as to current drawn by each unit.

Normal service calls for removal of the panels once a year to brush off the collected dust and checking to see that the input and output connections are tight. These units depend upon convection currents for cooling and must not be located in confining quarters or in rooms having high ambient temperatures. The transformers are designed to operate at temperatures not to exceed room temperature plus 65 degrees centigrade.

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As the magnetic shunts operate in a very strong magnetic field they can be the source of a loud hum if not properly centered. In this case they vibrate against the transformer laminations causing the noise.

Brass centering screws in fiber blocks are provided to readjust the position of these shunts when necessary. Please refer to drawing #7010-A for instructions. The original units have two brass screws in each position. The later models with red dots on the nameplates have a third screw in the center which serves to lock the two outside screws when it is tightened.

If trouble is experienced lighting the bulb despite the fact that the spark gap in the lamphouse is delivering a good normal spark, the RA unit in the power supply may be suspected. If the one ohm resistor should be open or the capacitor out of the circuit due to some malfunction of the RA relay, a temporary connection can be made by pulling away the four circuit nylon plug from the relay assembly and using two pieces of solid #14 wire to make jumpers--one connecting the two inside connections (black wires) together and the second to connect the two outside (red wires) connections together. This will enable the capacitor to be connected directly across the output of the power supply and ignite the bulb with a higher than normal peak starting current, but would be satisfactory until a new RA unit can be installed. If this does not correct the condition, the capacitor should be checked.

At any sign of trouble it is always advisable to check the no load voltage of the unit to see if the normal 80 to 120 volts are being obtained. Under normal conditions, the bulb will ignite almost instantaneously with an ignition time of one second or less. If the bulb fails to ignite, under no circumstances should the start button be pressed for more than one or two seconds - nor in rapid succession. This can damage the starter components as they are designed for momentary duty only.

IMPORTANT!

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XETRON XHN/XCN SERIES HORIZONTAL LAMPHOUSE/CONSOLE TERMINATION

JULY 1983

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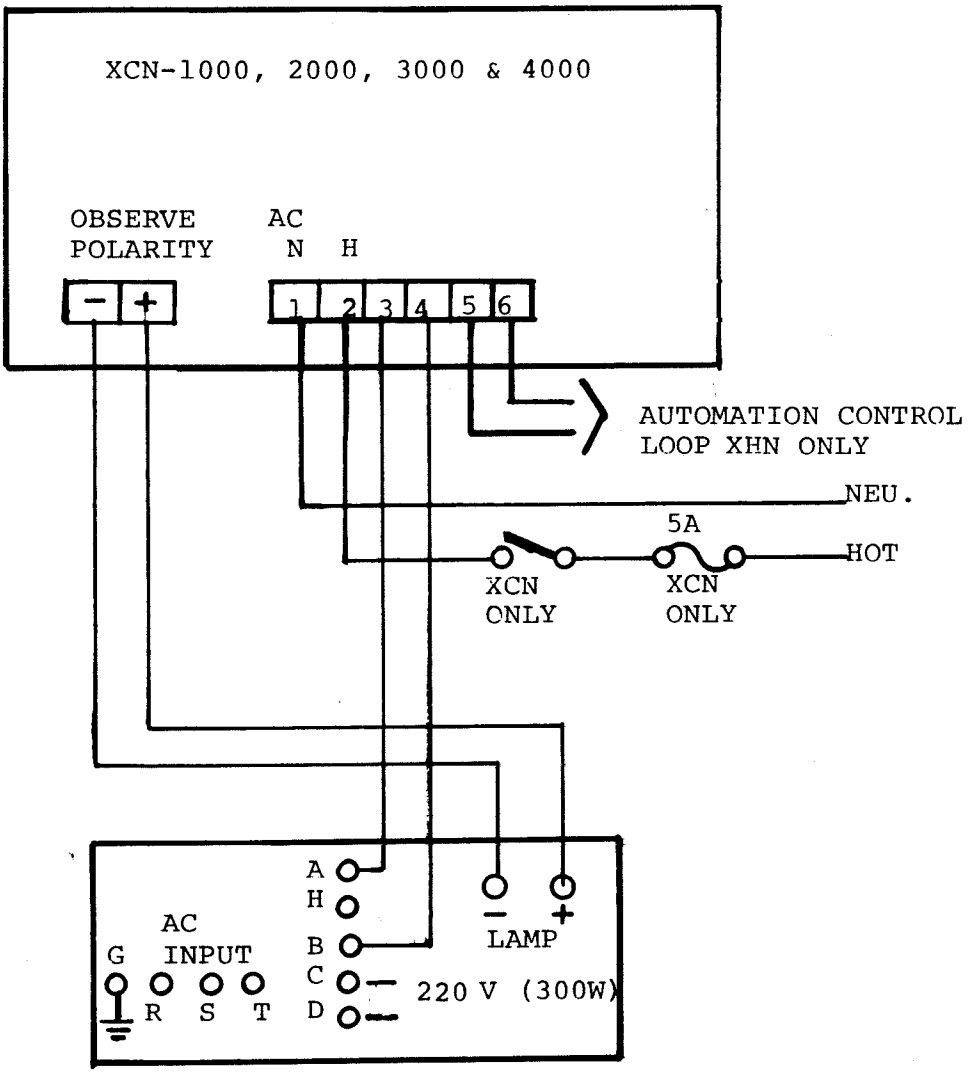

POWER SUPPLY

XETRON®	XETRON/IREM POWER SUPPLIES TROUBLE SHOOTING INFORMATION	JULY 1983

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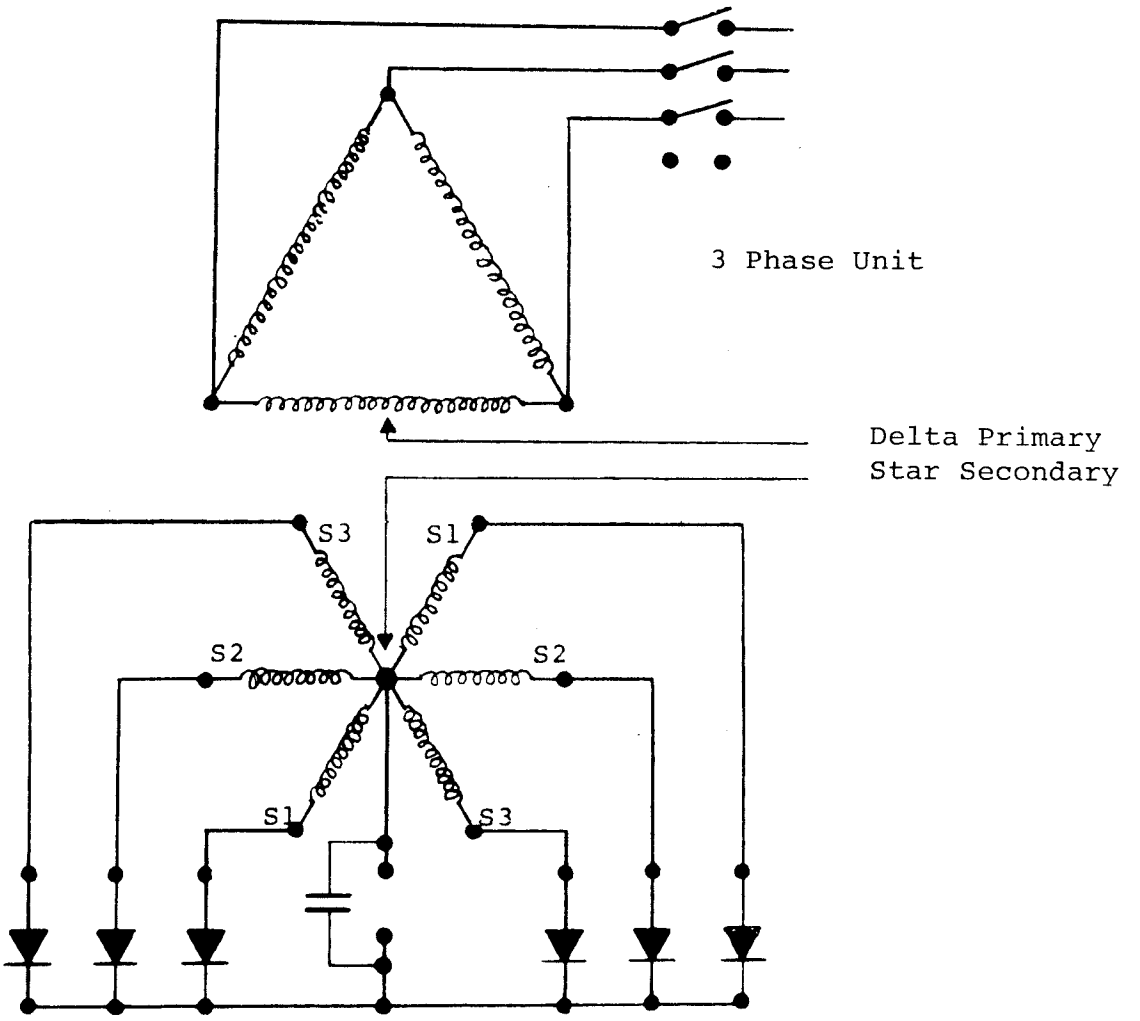

1. To check 3Ø secondary for balance, use AC voltmeter from negative DC terminal to lead from each diode. The voltage should be the same at each diode.

2. DC voltage drop, with load, should be the same across each diode. Measured from the positive DC terminal to each diode.

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XETRON POWER SUPPLIES & LAMPHOUSES

TROUBLE SHOOTING INFORMATION

JULY 1983

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1. Will not turn on - magnetic contactor will not close.	1. Check AC fuses - foreign particles or rust in magnetic contactor. Defective coil in magnetic contactor. Check toggle switch. Check TP in series with coil (1 phase units only). Operate contacts manually. In case automation is used, check external circuits which will be bypassed if toggle switch is ON.
2. Adjusting wheel turns very easily—power supply makes noise under load.	2. Adjust brass screws in each transformer bank - refer to special page in power supply manual. The noise is mechanical and does not indicate any electrical malfunction.
3. Adjusting wheel turns very hard.	3. Shunt tight due to adjusting screws--do not force wheel - loosen brass screws in each transformer bank - then check for excessive hum with power supply under load.
4. Difficult to strike Xenon bulb or erratic start.	4. Check for burned or pitted contacts in relay on RA control board in power supply. Remove plastic plug from RA unit - using #14 jumper wires - jump black to black and red to red to bypass RA. See if bulb will strike with no hesitation - if so, replace RA unit. Power supply can be operated with the jumper wires, but new RA unit should be installed as soon as possible. Check Xenon bulb for excessive erosion of tip as this widens the gap and makes starting more difficult. Failure to obtain 85-90 volts no load may indicate defective filter capacitor. check internal wiring of lamphouse to see if spark is going to ground rather than through bulb. Remove on DC cable while making this check. Check .1 mfd (600 or 1000V) capacitor (one of 4 on starter) in circuit between the negative DC lead and 1000V (preferably oil) anywhere across the negative DC to ground and try the ignition.

XETRON	XETRON POWER SUPPLIES & LAMPHOUSES TROUBLE SHOOTING INFORMATION (CONTINUED)	JULY 1983

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5. No 220 VAC for ignition from terminals marked 220 VAC single phase units only. Three phase units take 220 VAC for ignition directly from the load side of the magnetic contactor.	5. Auxiliary transformer winding in power supply open due to excessive load--replace transformer section or obtain temporary operation by using separate AC supply to lamphouse.
6. Manetic contactor chatters--will not hold in.	6. One phase of 3 phase power open or 3 phase power low. Minimum should be 208. Check latching contacts.
7. Flicker on screen--machine running.	7. Most common causes is too much light. *Reduce power or turn main reflector focus control clockwise (moving reflector toward bulb) this will decrease center screen light and improve light distribution. Check for bad bulb. See additional items under Section 8. *Should not exceed 16 +/- 2 FL.
8. Flicker on screen--machine not running--white light only.	8. Bad Xenon bulb. Arc can be very unstable if tungsten deposit appears on bottom of anode. Bad diode—Check with AC probe (6A scale) should not exceed approximately 2.5 amps. Open filter capacitor or defective RA unit. Check diodes with ohmmeter after disconnecting one lead. Capacitor or capacitors (large can type unit) could be defective 3 phase disconnect switch. Check voltage on each phase at power supply input. Capacitors can be tested by turning on power supply, no ignition, turn off and place short or VM across output. Should have violent spark or voltmeter should show 80-90 volts with gradual drops off to zero.
9. Bulb will not ignite--very low open voltage supply hums.	9. This applies to N1, N3 & G3 supplies and indicates that one or more of the diodes may be shorted. To check diodes, turn off power to the supply. Disconnect one side of each diode and check each one with an ohmmeter on low scale. A good diode will read infinity in one direction and approximately 5 to 15 ohms in the opposite direction. If you read the same low resistance in both directions, the diode is defective and should be replaced. Note that all diodes do not have to read exactly the same resistance.

XETRON®	N3 & G3 SERIES XETRON/IREM POWER SUPPLIES NOISE REDUCTION	JULY 1983

XETRON CORPORATION, Ten Saddle Rd., Cedar Knolls, NJ 07927 U.S.A. Telephone (201) 267-8200

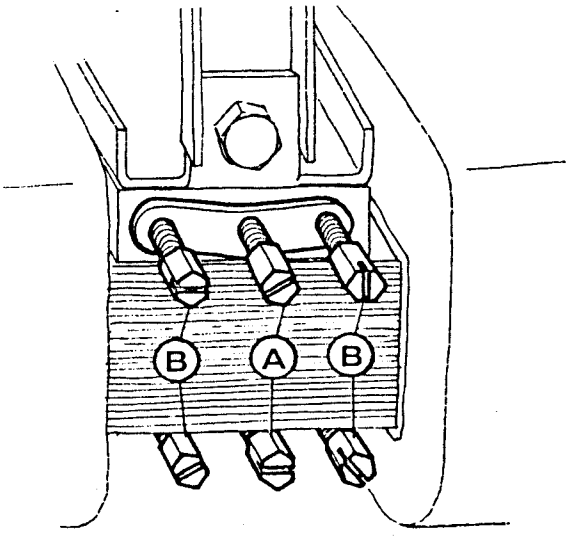
Abnormal hum or vibration which may develop in a power supply can usually be eliminated by tightening the brass screws located in the composition blocks on both sides of the movable shunt or center section of the power supply. These brass screws are readily accessible after removing the blue panels (N3 Series) and there are ten or twelve brass screws on each side. We recommend the first effort to reduce the noise be made by turning each screw associated with the center transformer one half turn (all adjustments made while power supply is on and under load). If no noise reduction is noted, return it to the "as found" position and try the others, first on one side and then the other. If the noise has not been reduced to a satisfactory level, we recommend the following:

1. Turn on the rectifier and bring it to nominal current.
2. Remove the rectifier front panel (blue - N3 Series).
3. Loosen all the center screws (A), whose function it is to lock the adjustment screws (B).
4. Starting from the lower part of the unit, slightly turn clockwise or counterclockwise the adjustment screws (B) (a rotation of few degrees may be enough) until the unit reaches the point of lowest hum. Check that the rotation of the regulation hand-wheel is still normal and not bound.
5. After making the adjustment, tighten the center screws (A). CAUTION—DO NOT FORCE OR OVERTIGHTEN THESE SCREWS.

It is advisable to install the rectifier on rubber or felt pads in order to insulate the unit from the floor.

(A) Clamping screws

(B) Adjustment screws



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XETRON/IREM POWER SUPPLIES

PARTS

JULY 1983

XETRON CORPORATION, Ten Saddle Rd., Cedar Knolls, NJ 07927 U.S.A. Telephone (201) 267-8200

G1-X100 POWEER SUPPLY 208/230V 60HZ

DESIGN.	DESCRIPTION	TYPE	Q	NUMBER
MS	Magnetic Shunt	G1	1	62000911
T1-T2	Variable Coupling Transformer	G1X100	2	63000374
L1/L2	Inductance	G1X100	2	63050095
MO	Terminal Board	N3-A	1	87445254
H	Regulation Hand Wheel	3332/IM	1	79009051
D1-D4	Silicon Diode	SKN 100/08	4	88111090
C1-C5	Capacitors 0,22 uF 630V	102	5	88310020
C	Capacitor 0,022 mF	1500V	1	88310040
C7-C11	Capacitors 5800 uF 100V	36 CD	5	88322105
R1-R4	Thermistor 1,5 Ohm 5W	TSD	4	88290101
R5	Resistance 1 Ohm	5W	1	88201100
W	Main Switch	DIL 022 NA	1	88471223

G3-X131 POWER SUPPLY 208/230V 60HZ

MS	Magnetic Shunt	N3	1	62000900
T1-T3	Transformer	N3-29	3	63017094
MO	Terminal Board	N3-A	1	87445254
RA	Ignition Relay	LP/C	1	78800401
H	Regulation Hand Wheel		1	79009050
D1-D6	Silicon Diode 1000 PIV	25 HAR	6	88111010
C1-C6-C8	Capacitors 0,22 uF 600V	102	7	88310020
C7	Capacitors Electrolytic 5800uF		2	88322105
C9	Capacitors 0,022 uF	1500V	1	88310040
RC	Single Pole Switch	T 106 A	1	88401100
W	Main Switch 220V 60Hz	DIL 22 NA	1	88471223

N3-X141 POWER SUPPLY 208/230V 60HZ

MS	Magnetic Shunt	N3	1	62000909
T1-T3	Transformer	N3-29	3	63017110
MO	Terminal Board	N3-A	1	87445254
RA	Ignition Relay	LP/C	1	78800401
H	Regulation Hand Wheel	333/IM	1	79009051
D1-D6	Silicon Diode 1000 PIV	25 AR	6	88111010
C1-C6-C8	Capacitors 0,22 uF 600V	102	7	88310020
C7	Capacitors Electrolytic 5800uF	FC-85	2	88322105
RC	Single Pole Switch	T 106 A	1	88401100
W	Main Switch 220V 60Hz	DIL 22 NA	1	88473223
C9	Capacitor 0,022 uF	1500V	1	88310040

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N3-X75/G3-X75 POWER SUPPLIES 208/230V 60HZ

DESIGN.	DESCRIPTION	TYPE	Q	NUMBER
MS	Magnetic Shunt	N3	1	62000900
T1-T3	Variable Coupling Transformer	N3-28	3	63017028
MO	Terminal Board	N3-A	1	87445254
RA	Ignition Relay	LP/A	1	78800400
H	Regulation Hand Wheel	3332/IM	1	79009050
D1-D6	Silicon Diode 1000 PIV	41 HAR 40	6	88111022
C1-C6-C8	Capacitors 0,22 uF 600V	102	7	88310020
C7	Capacitor 3400 uF 75/95V	C 36 D	1	88322060
RC	Single Pole Switch	T106/A	1	88401100
W	Main Switch 16A	LC1	1	88471122
C9	Capacitor 0,022 uF	1500V	1	88310040

N3-X75/G3-X75 POWER SUPPLIES 220/380V 50HZ

MS	Magnetic Shunt	N3	1	62000900
AT	Auto Transformer	AM-10	1	63010010
T1-T3	Transformer	N3-52	3	63017024
MO	Terminal Board	N3-A	1	87445254
RA	Ignition Relay	LP/A	1	78800400
H	Regulator Hand Wheel	3332/IM	1	79009050
D1-D6	Silicone Diode	41 HAR 40	6	88111022
C1-C6	Capacitor	102	6	88310020
C7	Capaictor	C 36 D	1	88322060
RC	Single Pole Switch	2400/B2	1	88401103
W	Main Switch	LC1	1	88471122
B	Contactor Coil	220V 50Hz	1	88471902
CT	Control Voltage Switch	5032/IT	1	88511210
F	Fuse	1-A	1	88521010

N3-X75/95 POWER SUPPLIES 208/230V 60HZ

MS	Magnetic Shunt	N3	1	62000902
T1-T3	Variable Coupling Transformer	N3-40	3	63017040
MO	Terminal Board	N3-A	1	87445254
RA	Ignition Relay	LP/A	1	78800400
H	Regulation Hand Wheel	3333/IM	1	79009051
D1-D6	Silicon Diode 1000 PIV	25 AR 40	6	88111010
C1-C6-C3	Capacitors 0,22 uF 600V	102	7	88310020
C7	Capacitor 5800 uF 100/125V	FC 85	1	88322105
RC	Single Pole Switch	T 106A	1	88401100
W	Main Switch 16A 220V 60Hz	LC1	1	88471122
C9	Capacitors 0,022 uF	1500V	1	88310040

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N3-X50/N3-X75

G3-X75/G3-X80

POWER SUPPLY
SCHEMATIC

JULY 1983