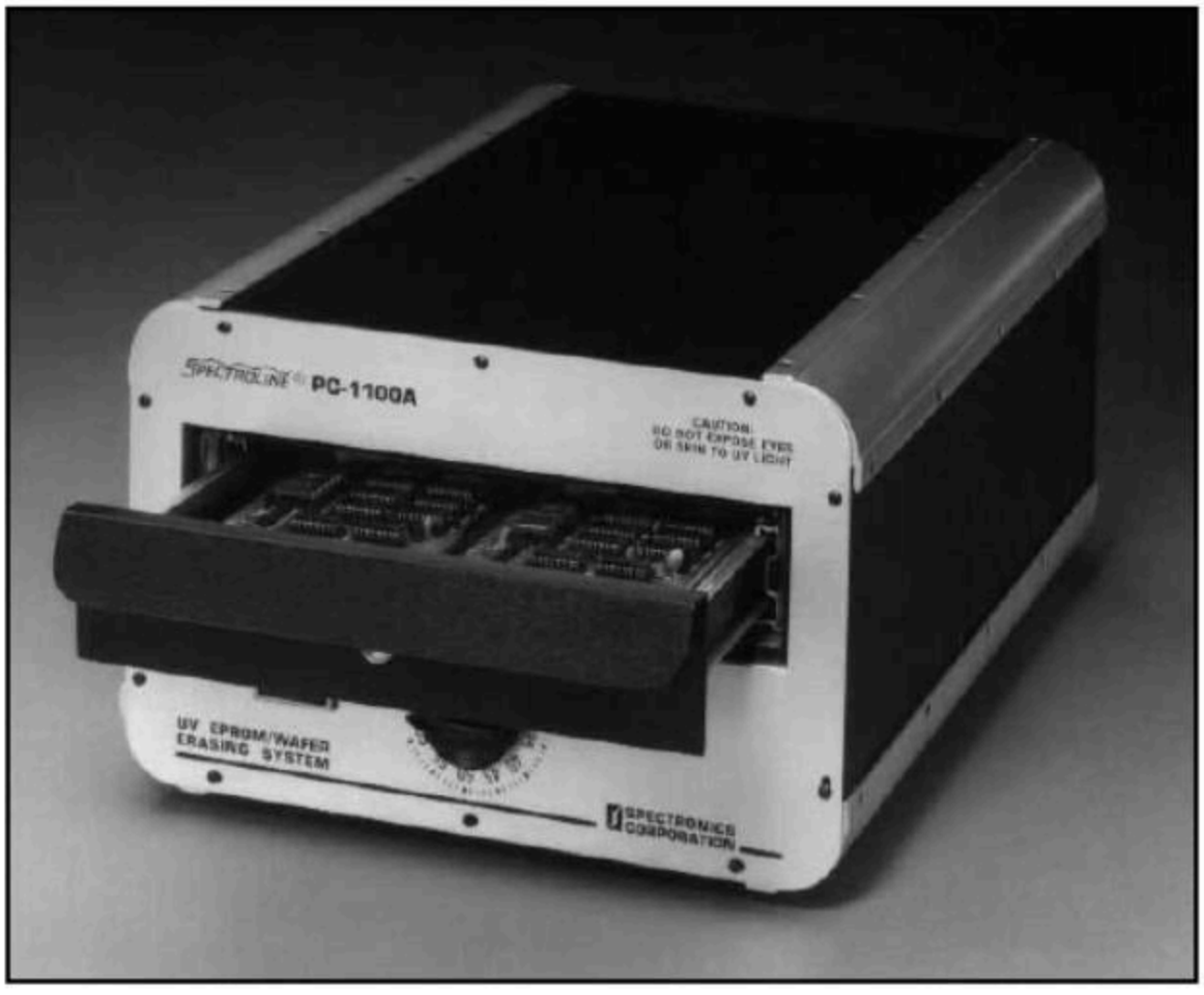
OPERATOR'S MANUAL

SPECTROLINE®

PC-1100A, -2200A and -3300A
UV EPROM Erasing Cabinets



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WARNING

Please read the instructions in this manual carefully *before* using your Spectroline® PC-Series UV EPROM erasing cabinet. This cabinet is carefully designed to prevent accidental ultraviolet exposure and electrical shock to the operator when properly used. However, no design can guard against intentional efforts to defeat the safety mechanisms or careless use of an instrument. **Failure to follow directions could result in a serious or even fatal accident.**

INTRODUCTION

The Spectroline PC-1100A, -2200A and -3300A UV EPROM erasing cabinets are compact, portable, heavy-duty units designed for high volume chip erasure. All three cabinets feature high intensity grid lamps that emit short wave UV (254nm) radiation. They are equipped with a presettable 60-minute timer for automatic unit shutoff, as well as high volume exhaust fans to maintain the temperature at chip level between 95°F (35°C) and 122°F (50°C).

A removable tray insert with a conductive foam pad for EPROM chips is provided with each cabinet. Additional tray inserts may be purchased for preloading of chips to reduce turnaround time.

UNPACKING AND INSPECTION

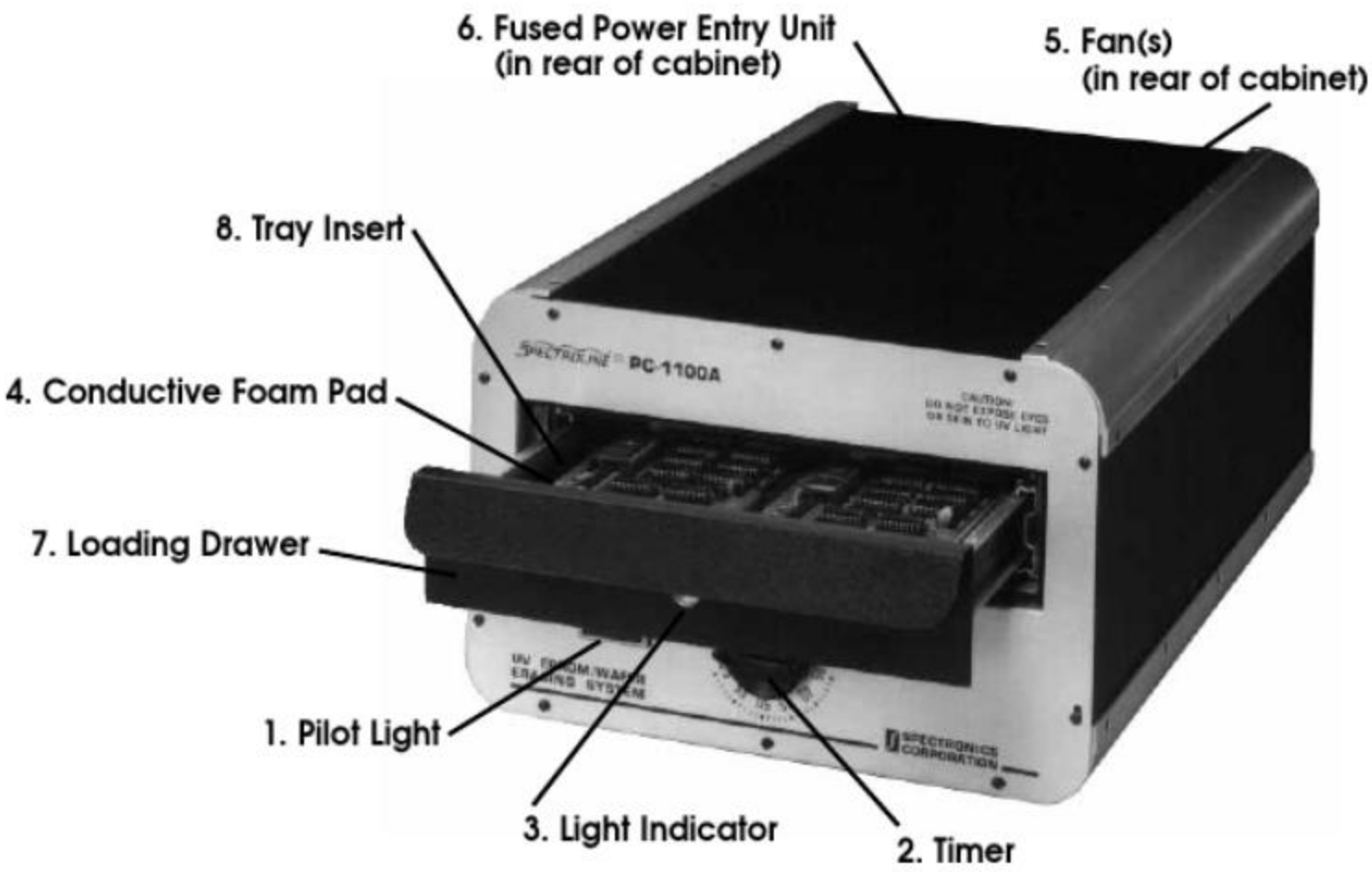
Unpack the cabinet and inspect it thoroughly for possible damage caused by shipment. Check the electrical performance as soon as possible according to the INSTALLATION notes and GENERAL FUNCTIONAL CHECKS outlined in the ''OPERATION'' section of this manual. If any damage is noted, immediately notify the carrier and supplier before attempting to use the instrument. Save the shipping cartons and packing materials for future storing and shipping of the cabinet.

The PC-Series cabinets are available in 120V/60Hz, 230V/50Hz, 240V/50Hz or 100V/50-60Hz models. Refer to the plate on the back of the cabinet for power source requirements.

LAMP CONTAINS MERCURY
Manage in Accord with Disposal Laws
See: www.lamprecycle.org

CABINET DESCRIPTION

1. Pilot Light	Indicates that power is available to the grid lamp(s) and the fan.
2. Timer	Serves as an on-off switch and energizes grid lamp(s) for the predetermined time up to 60 minutes.
3. Light Indicator(s)	Absorb UV to provide visible indication that the corresponding grid lamps are operating.
4. Conductive Foam Pad	Electrically conductive foam pad reduces the possibility of electrostatic damage to the EPROMs.
5. Fan(s)	Provide optimum temperature conditions in the cabinet for maximum ultraviolet output and efficient erasing conditions.
6. Fused Power Entry Unit	Supplies power to the unit via the power cord. Uses metric Type F or equivalent of appropriate current. The 120V/60Hz and 100V/50-60Hz units use one fuse; 230V/50Hz units and 240V/50Hz use two fuses.
7. Loading Drawer	Accepts EPROMs, PC boards, silicon wafers, metric cards and open-face stocking tubes for erasure.
8. Tray Insert	Easily removable for quick loading and unloading of devices. Height adjustable to maintain optimum exposure distance.



OPERATION

This section of the manual provides information required to operate the PC-series cabinet in a safe and proper manner.

SAFETY PRECAUTIONS

This cabinet contains equipment producing hazardous voltages and also high levels of short wave ultraviolet (254nm) radiation. It should be operated only by personnel qualified to recognize electrical shock and ultraviolet radiation hazards and trained in the safety precautions required to avoid possible injury.

Disconnect the power cord before removing or replacing the grid lamp assemblies.

Do not attempt to defeat the light safety interlock in order to see whether the grid lamps are operating. If the grid lamps are functioning, a blue glow will be clearly visible at the light indicator(s) at the front of the cabinet's loading drawer.

WARNING

The short wave ultraviolet radiation produced in this cabinet is hazardous. **Do not expose eyes or skin to this radiation.** Ultraviolet protective face wear (i.e., UVF-80 face shield) is available from Spectronics Corporation for use when limited exposure may be necessary. Fully cover hands, neck and arms. Leave no part of the body exposed. Use of gloves and long-sleeved shirt or lab coat are recommended.

INSTALLATION

This cabinet should be carefully unpacked and set upright on its rubber feet and operated only in this position. Place the cabinet at a safe distance from any surrounding walls to allow for proper air flow.

Connect the cord set to a power outlet that conforms to the power requirements of the cabinet as noted on the electrical characteristics nameplate on the back panel.

GENERAL FUNCTIONAL CHECKS

Close the loading drawer containing the removable tray insert. Set the timer to a nonzero position. The fan(s) should become energized and a blue glow should appear at all light indicators.

Initially the light may flicker, but it should become steady after a few seconds. This is normal, especially if the cabinet and grid lamp(s) are cold.

At the end of the preset exposure period, the grid lamp(s) and fan(s) will turn off automatically.

The cycle may be terminated prematurely by opening the drawer, at which point the grid lamp(s) should be de-energized, thus testing the safety interlock. The fan(s) will still be running, provided that the timer is at a nonzero value.

PROPER ADJUSTMENT OF TRAY INSERT

Every PC-Series cabinet is provided with a tray insert that is adjustable to varying heights. This allows the operator to maintain the optimum exposure distance. It is recommended that a $\frac{3}{8}$-inch (0.95cm) distance be maintained between the grid lamps and the EPROMs.

The tray insert may be easily raised in the tray by turning the screws located at the four corners of the insert in a *clockwise* direction; it may be lowered by turning the screws in a *counterclockwise* direction. Raising the tray insert (thus bringing the EPROM chips closer to the grid lamps) will increase the average ultraviolet intensity, although the irradiance distribution will become less uniform.

CALCULATING ERASE TIME

A good starting point can be obtained by dividing the EPROMs' nominal erasing energy in Watt-secs/cm^2 by 18,500 and multiplying by 1,000,000. This gives the estimated erasing time in seconds, based on the system's typical peak intensity of 18,500 µW/cm^2 when new. If an ultraviolet intensity radiometer (such as the Spectroline AccuMax™ XR-1000 with an XS-254nm sensor detector) is used, then a more accurate estimate may be obtained from:

$$\text{Time (seconds)} = \frac{\text{Nominal Erasing Energy (W-secs/cm}^2\text{)} \times 10^6}{\text{Irradiance (µW/cm}^2\text{)}}$$

NOTE: If any short wave UV radiometer other than a Spectroline model is being used, care must be taken to ensure that it is measuring *only 254nm*. Some competitive meters have sensitivity to visible light, long wave UV and/or infrared radiation and thus can give misleading and excessive intensity values, leading to incomplete erasure of the EPROM chips.

PROPER OPERATING PROCEDURE

1. Load devices to be processed into tray insert.
2. Place tray insert into loading drawer.
3. Close drawer.
4. Set cycle time by turning timer knob to desired position. The pilot light will now light.
5. Fans and grid lamps will shut off automatically when cycle is complete and pilot light will go off.
6. Unload erased devices.

TECHNICAL SPECIFICATIONS

Erasing Time and Chip Capacity

MODEL	INSIDE TRAY DIMENSIONS (W x L x H)	ERASING AREA	CHIP CAPACITY*	GRID LAMPS
PC-1100A	8 3/8 x 12 x 1 3/8 in (21.3 x 30.5 x 3.5 cm)	8 x 9 1/4 in = 74 in² 20.3 x 23.5 cm = 477 cm²	84	1
PC-2200A	16 3/8 x 12 x 1 3/8 in (41.6 x 30.5 x 3.5 cm)	16 x 9 1/4 in = 148 in² 40.6 x 23.5 cm = 954 cm²	168	2
PC-3300A	24 3/8 x 12 x 1 3/8 in (61.9 x 30.5 x 3.5 cm)	24 x 9 1/4 in = 222 in² 61.0 x 23.5 cm = 1433 cm²	252	3

*Based on 24-pin EPROMs

ELECTRICAL SPECIFICATIONS

MODEL	WAVELENGTH	VOLTS	HZ	AMPS	FUSE
PC-1100A	UV-C	120	60	3.0	3.0A F
PC-2200A	UV-C	120	60	4.0	4.0A F
PC-3300A	UV-C	120	60	6.0	6.0A F
PC-1100A/F; /FB; /FA	UV-C	230-240	50	1.0	1.0A F
PC-2200A/F; /FB; /FA	UV-C	230-240	50	2.0	2.0A F
PC-3300A/F; /FB; /FA	UV-C	230-240	50	3.15	3.15A F
PC-1100A/J	UV-C	100	50-60	3.0	3.0A F
PC-2200A/J	UV-C	100	50-60	4.0	4.0A F
PC-3300A/J	UV-C	100	50-60	6.0	6.0A F

The fuses are metric Fast Blo fuses, Littelfuse 216 000 or 217 000 series or equal.

MAINTENANCE

The PC-Series cabinets are constructed with high quality materials and components. By providing reasonable care and following the instructions in this manual, the user can expect a long life from the cabinet.

The following servicing instructions are intended for limited maintenance of the PC-Series UV EPROM erasing cabinets. **Do not perform any servicing other than that contained in these instructions. Return the cabinet to the factory for maintenance not covered in this section.**

CONDUCTIVE FOAM PAD REPLACEMENT

Visibly worn conductive foam pads should be replaced to protect your EPROMs from harmful electrostatic buildup. To replace these pads, gently pull up the old pad and its adhesive backing. Peel off the protective paper covering the new pad's adhesive. Attach the pad to the loading tray in the same position as the former pad.

CLEANING THE GRID LAMPS

The output of UV grid lamps may be impaired by improper handling or cleaning. It is therefore recommended that the grid lamps be cleaned periodically with a pure solvent (e.g., methanol) or mild detergent to remove dirt. The grid lamps should subsequently be handled only with a clean cloth or gloves. Failure to do so can in time lead to one's fingerprints being etched into the grid lamp, reducing the output.

WARNING

To reduce the risk of electric shock, do not attempt to clean the cabinet or grid lamps while the cabinet is plugged into a power source. Immediately clean all spilled materials from the cabinet and wipe dry. If necessary, moisten a cloth with soap and water and clean the cabinet.

CHECKING GRID LAMP INTENSITY

Grid lamp intensity should be measured periodically with a short wave UV radiometer, such as the AccuMAX XR-1000 with an XS-254nm sensor detector. The ultraviolet grid lamps used in the PC-Series cabinets are designed to have a long life under normal operating conditions. However, as with any discharge-type grid lamp, the output slowly decreases at a rate dependent upon the grid lamp's operating parameters, such as grid lamp current and voltage, cabinet temperature, number of on-off cycles, grid lamp operation time, presence or absence of vibration, and other factors. Generally, the end of life will correspond to a minimum usable output and not total failure.

Even though the grid lamp may appear to be operating satisfactorily because its corresponding light indicator maintains the blue visible glow, the effective 254nm output may be low. This low output will result in unerased memory elements at acceptable erasing times. When the required erasing time becomes unacceptably long, it is time to replace the grid assembly.

NOTE: A flickering grid lamp or a grid lamp that fails to light can cause premature failure of the corresponding transformer ballast. **It is strongly recommended that any PC-Series cabinet with a continually flickering or extinguished grid lamp be immediately withdrawn from service until the problem is diagnosed and corrected.**

CHECKING TRANSFORMER BALLAST OUTPUT

WARNING — HIGH VOLTAGE

Refer this test to qualified personnel.

Due to the dangerous nature of high voltage testing procedures, we recommend a simple comparison test for checking transformer ballast output. A transformer ballast suspected of substandard output may be tested by wiring it to a grid lamp of known intensity output. If the grid lamp does not continue to produce similar UV intensity, then the transformer ballast should be replaced.

TROUBLESHOOTING

If, at any time, the cabinet does not yield satisfactory results, follow the procedure below before attempting any other step:

a. Repeat the previously outlined inspection, installation and general functional checks.

b. Check that the loading drawer is properly closed and that the safety interlock mechanism has been activated.

c. Check that the timer is at a nonzero position.

d. Check that the fuse is operating properly. Use needlenose pliers to remove the fuse drawer from the power entry unit. Remove and discard the spent fuse and replace it with the spare. The 230V and 240V units have two active fuses and a filter. *Both* fuses must be replaced.

Symptom	Probable Cause	Cure
1. Abnormally long erasure time	a. Grid lamp(s) functioning at substandard level	a. Replace grid lamp(s)
	b. Transformer ballast(s) functioning at substandard level	b. Replace transformer ballast(s)
	c. Tray insert height is too low	c. Raise height of tray insert
2. No erasure in area under one grid lamp	a. Grid lamp not functioning	a. Replace grid lamp
	b. Transformer ballast failure	b. Replace transformer ballast
3. Flickering light indicator	a. Grid lamp life expired	a. Replace grid lamp
	b. Transformer ballast failure	b. Replace transformer ballast

ENVIRONMENTAL SPECIFICATIONS

The Spectroline PC-series UV EPROM erasing cabinets are designed to be safe under the following conditions:

- Indoor use;
- Altitude up to 2,000 m (6,562 ft.);
- Temperature 5°C to 40°C (41°F to 104°F);
- Maximum relative humidity 80% for temperatures up to 31°C (88°F) decreasing linearly to 50% relative humidity at 40°C (104°F);
- Mains supply voltage fluctuations not to exceed ±10% of the nominal voltage;
- Installation Category II;
- Pollution Degree 2.

WARRANTY

The warranty policy for the PC-Series cabinets is provided on the Certificate of Limited Warranty enclosed separately with each unit.

NOTE: For assistance of any kind, contact the Customer Service Department at Spectronics Corporation. In the U.S. and Canada, call toll-free 1-800-274-8888. Give full details of the difficulty and

include the model and serial numbers of the unit and the date of purchase. If return of the cabinet to the factory is deemed necessary, shipping instructions will be provided. If an estimate of charges for nonwarranty work or other service work is required, a quote will be furnished upon evaluation of the unit. Service work will not be performed without customer approval.

SHIPPING

Carefully pack the cabinet in the original shipping container and packing materials. Ship it prepaid to the factory and be sure to insure the cabinet for full value.

ORDERING INFORMATION

REPLACEMENT PARTS AND ACCESSORIES

Description	Part No.
GRID LAMP ASSEMBLY for PC-Series	G750NO2
TRANSFORMER BALLAST (120 Volts) for PC-Series	125212
TRANSFORMER BALLAST (230 Volts) for PC-Series	125211
TRANSFORMER ADAPTER (100 Volt Mains) for PC-Series	TR-0352
TIMER for PC-Series	EC-0134
PILOT LIGHT (100-120 Volts) for PC-Series	PL-120
PILOT LIGHT (230 Volts) for PC-Series	PL-230
TRAY INSERT WITH CONDUCTIVE FOAM for PC-1100A	I-1100
TRAY INSERT WITH CONDUCTIVE FOAM for PC-2200A	I-2200
TRAY INSERT WITH CONDUCTIVE FOAM for PC-3300A	I-3300
CONDUCTIVE FOAM PAD for PC-1100A	F-1100
CONDUCTIVE FOAM PAD for PC-2200A	F-2200
CONDUCTIVE FOAM PAD for PC-3300A	F-3300
FACE SHIELD, UV-ABSORBING	UVF-80

NOTE: When ordering a replacement part, be sure to specify voltage of cabinet.