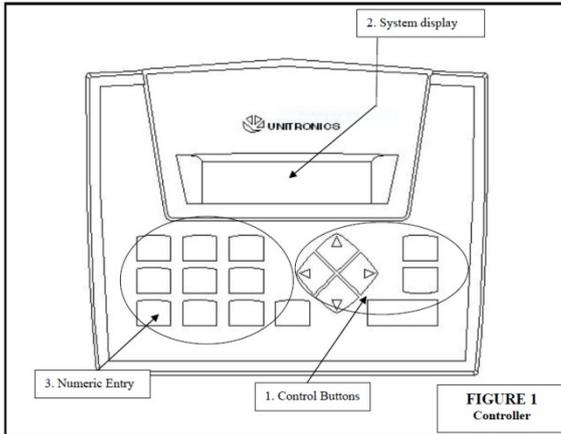


- SCOPE: How to programme and control a PE25, PE50, PE75 using the PLC interface.

This document presumes the user is familiar with the Low Pressure Plasma process and the Plasma Etch Inc. Equipment.



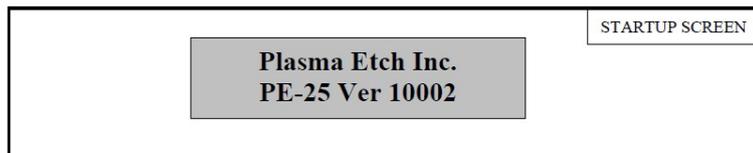
The system controls and process are monitored through the front control/display panel keypad.

**System Display-** Displays system messages, configuration information and machine status.

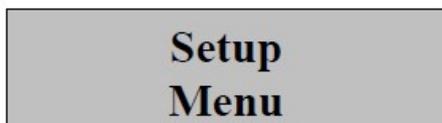
**Numeric Keypad-** Keypad for input for system setup.

**Control Buttons-** System operation is controlled using these buttons.

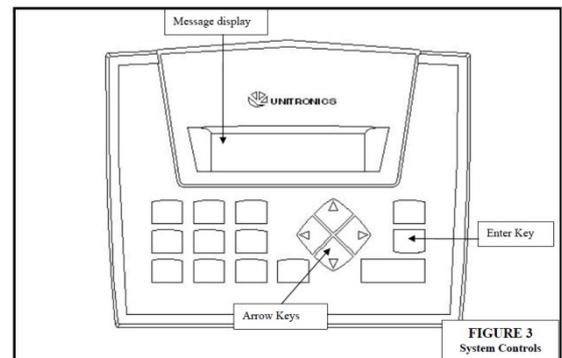
1. Check and release the EMO if engaged.
2. Set the power circuit breaker to the On (Up) position.
3. The system will power up and once complete and ready will display the 'Start up Screen'  
*Machine Model and Firmware Version will be displayed*



4. Press the 'Enter' key to progress to the menus.
5. Pushing the 'Left' button will cycle between the 'Setup' and 'Commands' menu screens.
6. Cycle to 'Setup' and press 'Enter'. System timer and other process variables will be found in this menu.

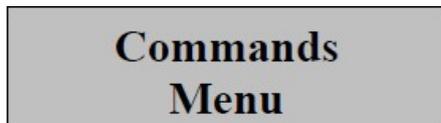


**NOTE:** Use the left and right arrow keys to find a menu item within a menu area. Use the up arrow key to go to the previous menu area. Use the enter key to select a menu item.

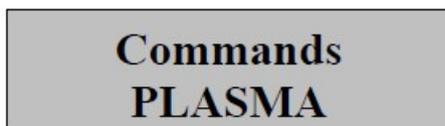


**\*\*\*WARNING \*\*\***  
**ONLY AUTHORIZED AND QUALIFIED PERSONNEL SHOULD ACCESS THIS AREA.**  
**IMPROPER CONFIGURATION CHANGES CAN CAUSE THE MACHINE TO MALFUNCTION.**

7. Using a combination of the 'Numeric' keys, 'Control' and 'Enter' keys, adjust the following relevant process variables to suit your process requirements:
  - A. **Plasma Time - 0 - 59.59 mins.** Amount of Plasma Process time required.
  - B. **Vacuum Set Point - 1 - 1,000mtorr.** Vacuum level required before process gasses are introduced into the chamber.
  - C. **Atmospheric Vent - 0 - 59.59 mins.** Amount of time allowed for the chamber to vent to atmospheric pressure when 'Cycle Stop' is initiated. Variable dependent on Chamber size and if Atmosphere or N2 vent.
  - D. **Purge Vent - 0 - 59 Seconds.** Amount of time given for the purge Air or N2 to be introduced upon completion of a cycle.
  - E. **Gas Stab - 0 - 59 Seconds.** Once 'Vacuum set point' is reached, this is the amount of time prior to 'Plasma time' to allow for the introduction of the process gasses and for the chamber pressure to settle in equilibrium.
  - F. **Vacuum Alarm - 0 - 59.59 Seconds.** Amount of time allowed for the pump to evacuate the chamber to the 'Vacuum set point' before an 'Alarm' state is raised.
  - G. **Auto Cycle Off - Off/On.** Automatically goes into 'Cycle off' mode after cycle completion. (Shuts pumps off and vents Chamber.)
8. Access the 'Commands' Menu screen.



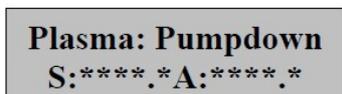
9. Load the Chamber- Take care not to 'Short Circuit' the electrode/shelf to the chamber walls.
10. Select the 'Plasma' Command and press 'Enter' to begin the sequence.



**RUN A WARM UP CYCLE FOR 15 MINUTES TO ALLOW THE VACUUM PUMP AND COMPONENTS TO STABILIZE BEFORE PROCESSING MATERIAL**

**WARNING:** Use the chamber door handle when closing the chamber door to avoid a pinch point when chamber is evacuated.

11. Observe the following:
  - I. The Vacuum Pump turns on and begins to evacuate the chamber.
  - II. The chamber vacuum reading will be displayed indicating the 'Actual' and 'Vacuum set point' values.



- III. Once the 'Vacuum set point' has been reached the system will go into 'Gas Stabilisation'.
- IV. The 'Gas Stabilisation' allows the gases to stabilise for a period; this is defined in the 'Gas Stab' setting In the configuration menu. The following will be displayed.

### Gas Stabilize

S: \*\* A: \*\*

**NOTE: Pressing the 'Left' Key at this point will display the current Chamber Vacuum level. This would have increased from the 'Vacuum set point' that had been achieved, due to the introduction of the process gases. To return to the 'Gas Stabilisation', screen press the 'Up' key to return.**

- V. After the process gasses are stabilised, the RF power is enabled. The Wattage is determined by the Potentiometer dial on the front of the system.
- VI. Inside the Chamber a Plasma Glow will be seen and the Plasma process timer will start. This was determined by the 'Plasma Time' in the commands menu.
- VII. The following screen will be displayed.

### Plasma Time

S: \*\*.\*\*. A: \*\*.\*\*.

**NOTE: Pressing the 'Left' Key at this point will display the current Chamber Vacuum level. This would of increased from the 'Vacuum set point' that had been achieved, due to the introduction of the process gases. To return to the 'Plasma Time' screen press the 'Up' key to return.**

**Using the commands menu the Plasma Time can be stopped short by using the 'Cycle End' Cue.**

- VIII. Once the 'Plasma time' is completed the RF power is removed, and the plasma glow will disappear from the chamber as the process gas valves are closed. The vacuum pump will shut off.
- IX. Chamber Vent Valve is opened for the period determined in 'Purge Vent' in setup menu. This time dilutes any contaminants or harmful elements in the chamber before being evacuated by the vacuum pump again.

### Purge Time

S: \*\* A: \*\*

- X. After completion of the 'Purge Vent' the chamber is evacuated by the pump until the 'Vacuum set point' is reached again.
- XI. The process is complete
- XII. If 'Auto Cycle Off' is 'On', the chamber will vent to Atmospheric pressure using the 'Atmospheric Vent' period determined in the setup menu. If 'Auto Cycle Off' is 'Off', the 'Cycle Off' cue will need to initiate using the commands menu.

### Chamber Vent

S: \*\*.\*\*. A: \*\*.\*\*.

- XIII. The following message will be displayed. The Chamber can be opened.

**Plasma Cycle  
Complete**