



# MINILOCK-ORION III

Plasma Enhanced Chemical Vapor Deposition (PECVD)

System with a Vacuum Loadlock

The Minilock-Orion III is a PECVD system with a vacuum loadlock that produces production-quality films on a compact platform. The unique reactor design produces low stress films with excellent step coverage at extremely low power levels. The system meets all safety, facility and process requirements within the lab and pilot line production environments. The Minilock-Orion III has many standard features not typically found on a system so reasonably priced, which is why many users worldwide have made it their PECVD system of choice.

## Applications

Toxic/Pyrophoric PECVD Processes. Films deposited: oxides, nitrides, oxynitrides, amorphous silicon and silicon carbide. Process gases: 100% silane, ammonia, TEOS, diethylsilane, nitrous oxide, oxygen, nitrogen, trimethylsilane and methane. The Minilock-Orion III comes with full process support both prior to and subsequent to purchase. For a more detailed discussion of applications and processes, visit [www.triontech.com](http://www.triontech.com).



## Tool Features

- Reactor** The cathode and anode are each machined out of single blocks of aluminum. After critical inspection they are hard anodized for protection from process chemistries. The bottom electrode is available in either 200mm or 300mm sizes and depending on electrode configuration, can process single wafers or mounted parts (3" to 300mm). It also has multiple size batch capability (4x3"; 3x4"; 7x2"). Process gases are introduced into the chamber either by an annular ring or a showerhead manifold.
- Lower Electrode** The system comes with either a 300 watt or 600 watt (both 350-460 kHz) bottom-powered electrode.
- Touch Screen Operator Interface** A color flat panel display with touch screen interface provides the operator with full process information at all times. The software interface guides the operator through each sequence in a logical fashion and gives fingertip control of all process parameters.
- PC Process Controller** The PC process controller provides simple and reliable system control. The graphical software package creates programs in block diagram form. Process recipes are stored on the hard drive or can be stored on USB flash drives allowing each operator to maintain individual recipes.
- AC Distribution Module** The AC distribution module automatically distributes predefined power quantities to the various internal components. When the Emergency Power Off button is tripped, the RF power is shut off and all valves involved with gas delivery are automatically closed and the machine automatically down to a safe standby mode. This system includes separate power controls for the main AC and peripherals.

<b>Automatic Pressure Control</b>	The system includes a butterfly pressure control valve operated directly by the process controller. This provides independent pressure control separate from all other processing parameters.
<b>Gas Delivery System</b>	State-of-the-art technology is utilized to ensure the utmost integrity and purity. Each reaction chamber accommodates up to eight mass flow controllers and all plumbing utilizes surface mount, C-seal technology or orbital welded VCR fittings.
<b>Vacuum Loadlock</b>	Trion's vacuum loadlocked system includes compatible robotic arm, reactor isolation valve and locked chamber. The robotic arm has a direct drive pick and place mechanism that provides high reliability.
<b>Safety</b>	The Minilock-Orion III meets all SEMI S2-93 safety requirements. A third party safety review is available upon request.
<b>Facilities</b>	Facility schematics can be provided upon request.

### Advanced Options

<b>Custom Gas Cabinets</b>	Trion provides remote gas cabinets with self-closing doors which house gas delivery and purging for toxic or corrosive gases controlled by the on-board computer. The system automatically purges the process supply lines with nitrogen when the system is placed in standby mode. This extends the life of the mfc's, regulators, valves and associated plumbing. The gas cabinets include regulators for toxic or dangerous gases such as chlorine, silane and ammonia. Included are automatic "at the bottle" shut off valves and stainless steel lecture bottle holders.
<b>Pumping Systems</b>	Each reaction chamber requires it's own pump. Trion can supply these as needed according to your requirements. There are mechanical, dry and turbo pump options available. You may choose to provide your own pump(s) or they can be purchased directly from Trion. All pump options provided by Trion are proven systems chosen to best meet your specific process needs.
<b>Temperature</b>	Bottom electrode temperature can be controlled from 50°C to 400°C using a resistive heater and IR thermo-couple.
<b>Triode Source</b>	A 600 watt, 13.56MHz top-powered triode source can be added to give stress control capability.