

TFDS-462 - Thin Film Deposition System

The model **TFDS-462** thin film deposition system is designed for research, development and low scale production. The vacuum chamber is an electro-polished stainless steel construction, sealed with Viton® O-Rings.



The chamber has two 4" nominal viewing windows with Pyrex® glass. An additional port for installation of a miniature e-beam gun is provided. The standard system is delivered with a resistive filament heater evaporation as a low cost and reliable method of depositing thin film coatings in vacuum. Several different design of resistive element are used: filament coil, metal foil boat and oxide crucible types.

The high current electrodes can be used up to 400 amps at 50 volts and are constructed of oxygen-free copper with Teflon® insulators for strength and durability. A manual shutter covers one of evaporation sources at a time.

The shutter position may be changed using the two locking device below base plate. Shutter plate can be removed for easy access to evaporation sources. A round plate below electrodes traps the evaporation material dropping from evaporation boat.

The substrate holder is a flat stainless steel plate 102 mm (4") diameter, 3.2 mm thick. The vertical and horizontal position of the substrate holder can be changed by using two fixing screws. The gas line consist of a shutoff and a metering stainless steel, bellow sealed, manually actuated valve The metering valve permit to stabilize the pressure in the chamber up to 1×10^{-3} Torr.

The vertical movement of the top plate with / without chamber is provided by vertical mechanical drive unit cogged belt drive type, with flanged electric motor actuator, fail safe on power loss.

Two proximity switches are used to cut out the electrical drive before the final position is reached. The hoist's design enables lifting of the top plate separately or together with the chamber.

The top plate with/without chamber can be turned clockwise when in top position for maintenance by removing fixing screw. Further more several optional equipment may be install such as: e-beam gun, sputtering source, planetary rotation, automatic shutters, full automation process, dry pumping ect.

Technical Data

Ultimate pressure:	less than 2×10^{-6} Torr
Pump Down Time:	1×10^{-5} Torr in 15 min
Frame:	closed type, aluminum anodizes profiles, painting table, doors and panels, leveling feet
Roughing Vacuum pump:	
<ul style="list-style-type: none"> Nominal pumping speed: Guaranteed ultimate pressure: 	250 l/min 3×10^{-4} Torr
Turbo-molecular Vacuum pump:	
<ul style="list-style-type: none"> Nominal pumping speed, N₂: Guaranteed ultimate pressure: 	250 l/min 1.5×10^{-10} Torr
Chamber:	10" I.D. x 18" H stainless steel cylinder, two 4" Pyrex® view port
Top plate:	12" OD x .55 thick, 304 Stainless Steel, five spare holes 1" with blank plug
Base plate:	12" OD x 55 thick 304 Stainless Steel, four spare holes 1" with blank plug, with NW100 adaptor to pumping station
Valves:	All vacuum valves (roughing, purge and vent) and gate are stainless steel bellow sealed, pneumatic operated.
Thermal evaporation:	2 pairs electrodes, non-cooled, 400 A maximum
Power supply:	
<ul style="list-style-type: none"> Model: Maximum current: Output voltage: 	TEPS-2000 400 A 5/10/15/20 V
Gas Flow:	1 channel (manual). Shutoff and metering valves are stainless steel, bellow sealed manually activated.
Gauges:	Dual Modular Vacuum Gauge Controller, 1 convection gauge, 1 Cold Cathode Measuring range 3×10^{-10} to 1×10^{-3} Torr
Repeatability:	Approx $\pm 5\%$
Hoist:	Electromechanically type, linear bearing, stroke 400 mm
Weight:	approx. 160 Kg
Utility requirements:	
<ul style="list-style-type: none"> Power required: Compressed air: Nitrogen: Ambient temperature: Humidity: 	380VAC 3Ph 50Hz 16A Filtered and dried, at 70 to 100 psig inlet pressure (5 to 7 Kg/Cm ²) Filtered and dried, at 100 psig (5 to 7 Kg/Cm ²) 25 \pm 6 °C 60% maximum