

TF500 AND TF600 BOX COATING SYSTEMS



FULLY-FEATURED SYSTEMS FOR ADVANCED R&D AND PRODUCTION

The HHV TF500 and TF600 are developed for enhanced levels of process capability.

A choice of chamber sizes and accessories, deposition techniques, work holders, load locks and pumping options allows the system to be configured to your exact needs. TF500 allows multiple sources to be accommodated and TF600 adds the benefits of ion beam processing. Both systems are available with load lock systems.

Control options include a PLC-controlled vacuum systems and manually-operated process accessories for simplicity, or a PC-based system which provides users with advanced functions such as recipe control and data logging.

Both systems are fitted with stainless steel chambers which have the high vacuum pump mounted on the rear. The top plate and bottom plates are designed specifically to give the optimum arrangement for each customer and can simultaneously accommodate resistance, e-beam and sputter sources. Dedicated sputter systems can be configured for upward or downward deposition.

The range of process accessories includes resistance sources and electron beam sources, plus DC and RF sputter sources.



TF500 and TF600 system features include

- Wide range of chamber size options allows optimum source to substrate configurations
- Resistance and electron beam evaporation
- DC and RF sputtering with upward and downward configuration
- Ion beam sources for etch and ion-assisted deposition
- Load locks and sample handling
- High temperature substrate heating to 900C
- PLC control option for semi-automatic operation
- PC control option for fully-automated deposition process with recipe control, data logging and system diagnostics
- Choice of turbo pumps from 500 l/s to 2200 l/s
- Choice of cryo pumps from 1500 l/s to 3500 l/s

TF500 AND TF600 BOX COATING SYSTEM

CHAMBER AND SOURCE OPTIONS

Chamber options

Both systems are provided with stainless steel 'box' chambers and stainless steel liners. Options include water-cooling channels and the periscope viewing accessory or viewport shutter to allow observation of the process.

The flexible base plate and top plate design allows the sources to be positioned according to customer requirements. Water cooling channels can be fitted where high-temperature work holders are used.

TF500 systems are available with a 500mm x 500mm chamber which provides accommodation for a range of deposition sources and work holders.

TF600 is available with a range of chambers, starting with 600mm wide x 500mm tall for sputter applications increasing to 800mm tall for applications such as lift-off processing.



TF600 chamber with 6kW electron beam source, 4" sputter source and two 2kVA resistance sources

Deposition sources

The versatile TF500 and TF600 are available with a single resistance source or a mixture of sources depending on requirements and budgets.

- Single or multiple resistance sources up to 400A
- Multi-pocket electron beam sources from 3kW to 6kW and above
- DC and RF sputter sources for upward or downward deposition, including height adjustment & flexible head designs

Ion sources

The additional pumping speed provided by the TF600 allows the use of ion sources for etch or assisted deposition.

- DC and RF ion sources for substrate etch or for ion beam assisted deposition processes.

Multi-process systems

The TF family is specially designed for multi-process applications. Systems can be specified with resistance sources, electron beam or sputter sources, or combinations for maximum flexibility. Sputter systems can be specified for upward or downward deposition.

Work holders

A range of work holders is available to complement the deposition sources.

Feature options include

- Plane rotary
- Water cooled rotary
- Domed rotary
- Heated to 900C using long-life internal elements
- RF or DC biased
- Z-shift for substrate transfer
- Height adjustment



TF600 sputter system with load lock

Load locks and sample handlers

TF600 offers users the benefits of load lock and sample transfer systems. Sample transfer systems are integrated with specially developed rotary work holders with z-axis shift for fast and reliable transfer of delicate work pieces.

Manual or motorised transport options are available

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COMPREHENSIVE SYSTEM CONTROL AND SAFETY

Systems control options

PLC control (Programmable Logic Controller)

TF600 is offered with a straightforward and reliable PLC control system which controls and monitors the vacuum system. The PLC provides a range of screens including a mimic to show the status of the vacuum system components, and returns the vacuum system to a safe condition in the event of a failure.

Operation of the process accessories is manual however the system can be specified with a deposition process controller to allow closed-loop control of the sources and semi-automated deposition of multi-layer films.



TF600 rack with PLC vacuum control and manual process accessories

The PC-controlled TF system builds upon the versatility offered by the PLC version while providing additional features such as data logging and user accounts.

- Full-size colour screen
- Built-in PC running Windows operating system with industry-standard control software to provide automated sample processing and data logging
- Process recipe programming allows users to build up a store of material and processes for instant recall
- Multiple user accounts to keep individual workers' data separate
- Password protected modes for normal operation, manual mode and service mode



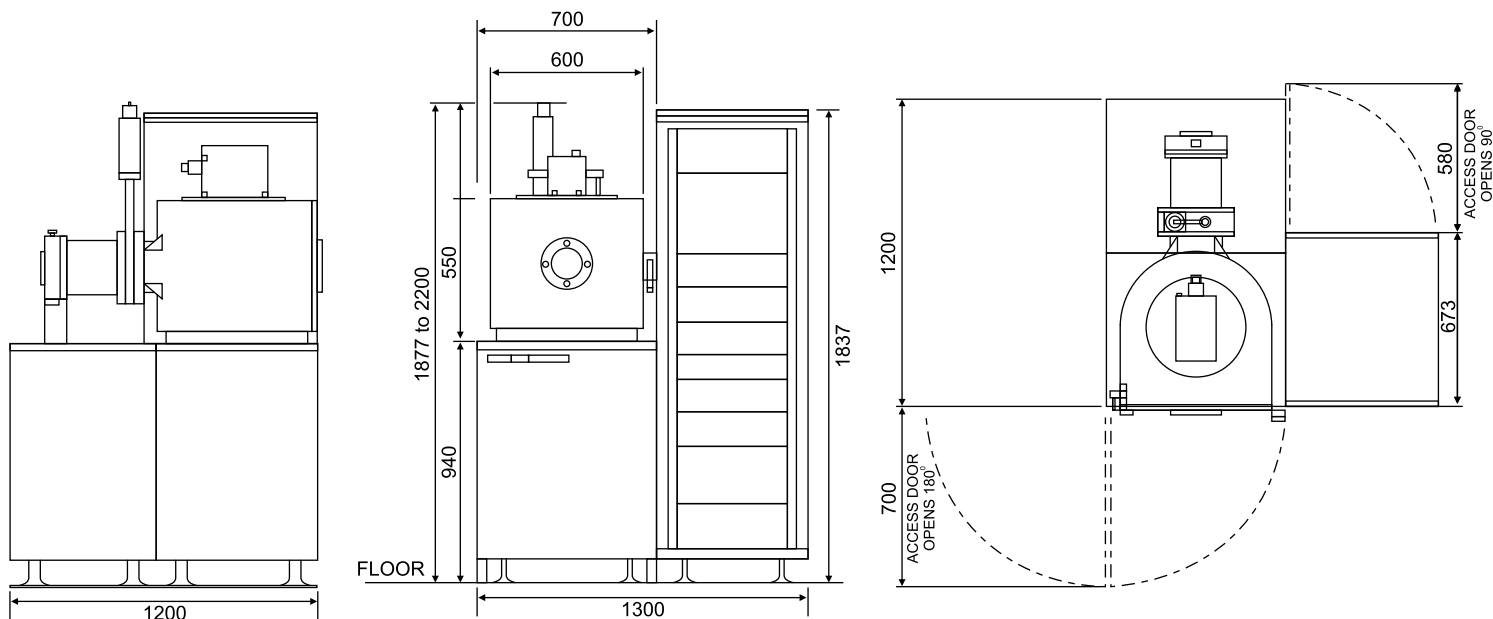
TF600 rack with PC control for fully automated system and process operation

Controls and safety

- The vacuum system is monitored and protected at all times to ensure that the system is returned to a safe condition in the event of a failure
- Comprehensive safety interlocks to provide maximum operator safety
- The TF family carries the CE mark, UL mark and CSA mark

TF500 AND TF600 BOX COATING SYSTEM

TECHNICAL INFORMATION



TF500 and TF600 system typical dimensions in mm

	TF500	TF600
Chamber Width (mm)	500	600
Chamber Height (mm)	500	500 or 800

TECHNICAL DATA

TF500

Turbo pumps	: 450 l/s mag-lev turbo, 500 l/s conventional turbo
Cryo pumps	: 1500 l/s cryo pump
Backing / roughing	: Rotary pump or dry scroll pump
Ultimate vacuum (typical for 500mm chamber)	: $<5 \times 10^{-7}$ mbar

TF600

Turbo pumps	: 1000 l/s to 2200 l/s mag-lev turbo
Cryo pumps	: 1500 l/s or 3500 l/s cryo pump
Backing / roughing	: Dry scroll pump
Ultimate vacuum (typical for 500mm x 600mm tall chamber)	: $<5 \times 10^{-7}$ mbar
Ion source	: Industry standard broad beam or narrow beam

Process accessories

Resistance sources	: Single or multiple, 1kVA or 2kVA
Electron beam	: 3kW (4 x 4cc) or 6kW (4 x 7cc, 6 x 7cc, 4 x 15cc, 6 x 15cc, other)
Sputter	: 50mm (2") to 150mm (6"), fixed height, variable height, tilt
Sputter configuration	: Upward or downward
Combinations	: Single or multi techniques in same chamber
Ion sources (TF600)	: Industry standard broad beam or narrow beam to suit application
Substrate holders	: Options include rotary, water cooled, rotary with heat (up to 900C), RF or DC bias, z-shift for sample transfer, height adjustment
Load lock systems	: Turbo pumped with manual or motor driven transfer arms



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