

# Q300T D

## Dual Target Sputtering System

A versatile, high vacuum sputtering solution for thin film and SEM applications



*The Q300T D features:*

- Automated sequential sputtering
- Dual sputter head
- Large format chamber
- Coat logging facility
- Fully automated touch-screen control
- Customer defined coating protocols
- High resolution turbomolecular pumping
- Vacuum shutdown
- Dual channel film thickness monitor module

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## Q300T D

### Dual Target Sputtering System

The Q300T D is a versatile sputter coater for thin film applications. It is also an ideal system for the preparation of specimens for examination by SEM and FEG-SEM.

As with the highly successful Q150 series of coaters and evaporators the Q300T D is mounted in an ergonomic, robust, moulded case. This coater delivers excellent coating quality combined with simple touch-screen control, making it suitable for both experienced and first time users. The instrument is fully adaptable and able to accept a wide range of specimen sizes. Loading and unloading of specimens is quick and extremely easy.

The Q300T D has two independent sputtering heads, which allows sequential sputtering of two metals without the need to break vacuum. The system is fully automated with user defined profiles controlling the pumping sequence, time, number of sputter cycles and the current used during the process.

Up to five layers from two target materials can be sputtered sequentially, this allows coating sequences which cycle through multiple targets. Specimens can be coated using non-oxidising (noble) metals such as gold (Au) and platinum (Pt). For coatings with a fine grain structure iridium can also be used. With the high quality vacuum system and shutter facility the Q300T D is also capable of using oxidising metal targets such as chromium (Cr) and aluminium (Al) to produce fine films and coatings.

A scroll pump with a pumping speed of 5m<sup>3</sup>/hr or a diaphragm pump, which are excellent alternatives to rotary vane pumps, are options where oil free or clean room quality pumping is required.

An extended height vacuum chamber, which is 87 mm higher than the standard 127 mm high chamber, is available. This provides increased source to specimen distance and is ideal for coating larger specimens.

### Dual sputter head with automatic shutter control



## Main features

The Q300T D sputter coater incorporates a 300 mm x 127 mm work chamber. The specimen stage accepts substrates of 2" 3" or 4" wafer sizes as standard and 6" wafers with an optional stage accessory. An extended height glass chamber is available to enable coating of larger format specimens.

### Vacuum control

High vacuum turbo pumping allows sputtering of a wide range of oxidising and non-oxidising metals for thin film and electron microscopy applications.

Automatic vacuum control which can be pre-programmed to suit the process and material; there is no manual adjustment of a needle valve required.

### Touch-screen control

A full graphical interface is included with touch-screen buttons and controls. This enables optimal control for each function. In addition profiles, parameters, the help screen, maintenance information etc. are also displayed.

### Coat logging

Capability to record a log of the last 100 coatings carried out. A window displaying a summary of the coatings can be viewed on the instrument.

### Stages

A flat, adjustable stage capable of accepting 4" (101.6 mm) wafers is supplied as standard with the Q300T D. This stage has a rotation speed of 14 to 38 rpm.

Additionally a swinging arm stage drive is also supplied as standard with the Q300T D. This is a stage drive and positioning mechanism which positions the stage under the correct target.

As an accessory a 6" wafer stage is available, which is a flat adjustable stage capable of accepting 6" or 152.4 mm wafers. The stage has a maximum rotation speed of 38 rpm and includes two masks for improving uniformity of coating.

### Film thickness monitor

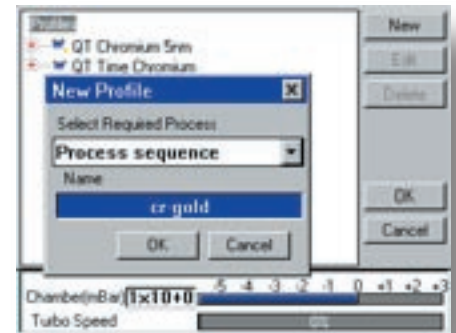
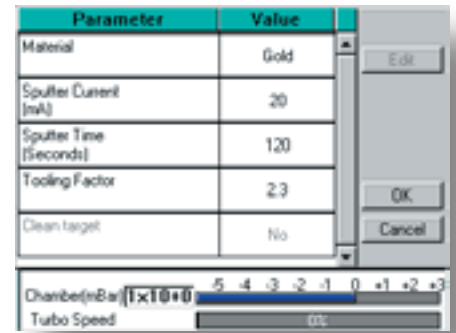
The Q300T D can be fitted with an optional dual film thickness monitor (FTM), which measures the coating thickness on two quartz crystal monitors located within the chamber; this allows the user to control the thickness of material deposited on to the specimen. For example, the Q300T D can automatically terminate a coating profile when the required thickness has been achieved. Alternatively the process can be terminated by time.

### Vacuum shutdown

This feature improves system cleanliness and pump-down speeds by allowing the operator to switch off the turbo pump, yet maintain the chamber under vacuum when the coater is not in use.

### Emergency stop switch

An optional lockable emergency stop switch is located in a position easily accessible for the operator, on top of the coater, to immediately cut power to the unit.



Dual film thickness monitor and swinging arm stage

## Ordering Information

**NB:** For a full quotation, including on-site installation and customer training, please contact us or our local distributor

**Q300T D** Large-chamber-turbo-pumped sputter coater, supplied with two sputtering heads to ensure even metal deposition. Includes one SC502-314A 57 mm Ø x 0.1 mm gold (Au) sputter target and one TK8845 57 mm Ø x 0.3 mm chromium (Cr) target. A flat rotation stage for 4" wafers is supplied as standard. Pumping accessory pack included. A swinging arm stage drive and positioning mechanism is included which positions the stage under the correct target. Also provides the rotation drive to the stage.  
Rotation speed: Max 38 rpm. Min 14 rpm

**EK3175** Edwards RV3 two-stage rotary pump, approximately 4 m<sup>3</sup>/Hr with vacuum hose, coupling kit and oil mist filter

### Optional accessories

**11540** Diaphragm pump. An alternative to the RV3 rotary pump. The diaphragm pump is an oil free pump with a KF25 fitting for connection to the Q300T D

**Sputter Targets** Our standard range of noble and oxidising metal targets are available

**11576** Coating shield assembly, coating shields to protect large surfaces from coating deposition, easily removable for cleaning

**10994** 6" wafer specimen stage. A flat adjustable stage capable of accepting 6" or 101.6 mm wafers. Rotation speed: Max 38 rpm. Min 14 rpm. Target to stage height: 71 mm Max. 25 mm Min. Including stop plate assembly for positioning stage and masks to ensure optimum coating uniformity. When used with extended height cylinder (optional accessory) the target to stage height would be an additional 87 mm

**10067** 50 mm specimen stage. A 50mm diameter stage with 6 stub positions for 15 mm, 10 mm, 6.5 mm or 1/8" pin stubs. Rotation speed: Max 38 rpm. Min 14 rpm. Target to stage height variable between 25 mm and 71 mm for standard stage

**10779** Dual channel film thickness monitor and accessories. A fully integrated FTM system using the system touch screen display for control and display of all the FTM functions. Allows automatic termination of thickness. Displays rate for sputtering processes in nm/min. Two FTM crystal holders in the chamber in optimal positions for both targets and to coat one material per crystal. Resolution: 0.1 nm. Includes 2 spare C5460 crystals

**10596** Extended height vacuum chamber 87 mm higher than standard for increased source to specimen distance and for coating large specimens

**10357** Rotating specimen stage with adjustable tilt. A 50 mm diameter stage with 6 stub positions for 15 mm, 10 mm, 6.5 mm or 1/8" pin stubs when stage is inverted. Rotation speed: Max 38 rpm. Min 14 rpm. Target to stage height variable between 14 mm and 60 mm for standard stage

**10360** Rotary tilting stage. A "rota cota" type stage with variable tilt angle horizontal to 30 degrees. A 50 mm diameter stage with 6 stub positions for either 15 mm, 10 mm, 6.5 mm or 1/8" pin stubs when stage is inverted. Rotation speed: Max 33 rpm. Min 13 rpm. Requires the extended height cylinder to enable use of this accessory

**10428** Full range gauge assembly. A factory fitted option active full range gauge capable of measurement range 1000 mbar to 5 x 10<sup>-9</sup> mbar  
Typical ultimate vacuum of system 5 x 10<sup>-5</sup> mbar

**10422** Rotating vacuum spigot. The vacuum spigot that allows a more convenient connection of a vacuum hose to the rear of the Q300T when the instrument is located close to a wall or other obstruction

**10358** Slide stage. A 90 mm diameter stage with features for locating: 1 x 75 x 25 mm slide, 2 x 75 x 25 mm slides, 1 x 75 x 50 mm slide or 6 x 1/8" pin stubs when stage is inverted

**11223** A lockable emergency stop (e-stop) switch which can be mounted on top of the system in a position easily accessible for the operator. It is provided with a key to release the knob after activation. Note: the addition of the e-stop does not inhibit or replace the normal on/off switch function. The e-stop can be retrofitted to existing systems

**11288** 2 years spares kit for Q300T D

**C5460** Spare quartz crystal

## Q300T D Specification

**Instrument Case:** 585 mm W x 470 mm D x 410 mm H  
(Overall height of unit 650 mm). PU moulding

**Instrument Weight:** 45 Kg

**Work Chamber:** Borosilicate glass with integral PET  
implosion guard  
Size 300 mm outside diameter x 127 mm High

**Display:** 145 mm 320 x 240 Colour graphic TFT  
(Thin film transistor) display

**User interface:** Full graphical interface with touch screen  
buttons and controls

**Specimen Stage:** A flat rotation stage for 4" wafers is fitted  
as standard. A rotating/tilt stage and the  
'rota cota' rotary tilt stage are also options

**Vacuum System:** Turbo pump – internally mounted 70L/sec  
air cooled  
Rotary pump – 50L/min two stage rotary  
pump with oil mist filter

**Vacuum Measurement:** Pirani gauge as standard, full range gauge  
available as an option

**Typical Ultimate Vacuum:** 5 x 10<sup>-5</sup> mbar

**Sputter Vacuum Range:** 5 x 10<sup>-3</sup> to 5 x 10<sup>-2</sup> mbar

**Sputter Deposition Current:** 0 -150 mA

**Services:** Gases: process gas argon, 99.999%  
Nominal 5 psi

**Vent Gas:** Nitrogen (optional). Nominal 5 psi

*For full specifications, please see our website*

Distributed by:



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