

# Q300T T Plus

Triple target sputter coater for specimens up to 200 mm diameter



## Recommended applications:

- Wafer inspection
- Multiple sample preparation for SEM

Suitable for large samples up to 200 mm Ø or multiple small samples, the Q300T T Plus is a large chamber, turbo-pumped coating system ideally suited for sputtering a single large diameter specimen up to 8"/200 mm or multiple smaller specimens over a similar diameter – ideal for thin-film applications and SEM/FE-SEM. It is fitted with three individual sputtering heads to ensure even deposition of individual large specimens or multiple specimens. For economical coating of small specimens, 'single target' mode can be selected.

The Q Series is also available in a smaller chamber format:

Q150R S PLUS	Q150T PLUS	Q150V PLUS
An automatic sputter and carbon coater suitable for use with Tungsten/LaB <sub>6</sub> SEM and Benchtop SEM	An automatic turbomolecular coater - capable of both sputtering and carbon coating for a wide range of applications	An automatic high-vacuum coater for ultra-fine coatings - capable of both sputtering and carbon coating, with an ultimate vacuum of $1 \times 10^{-6}$ mbar
		

The Q300T T Plus is part of Quorum Technologies internationally acclaimed Q series of coaters, used by thousands of customers worldwide. Designed to provide high-quality coating solutions for SEM, TEM and thin-film applications, the Q series is versatile, affordable and easy to use. **These products are for Research Use Only.**

# Q300T T Plus

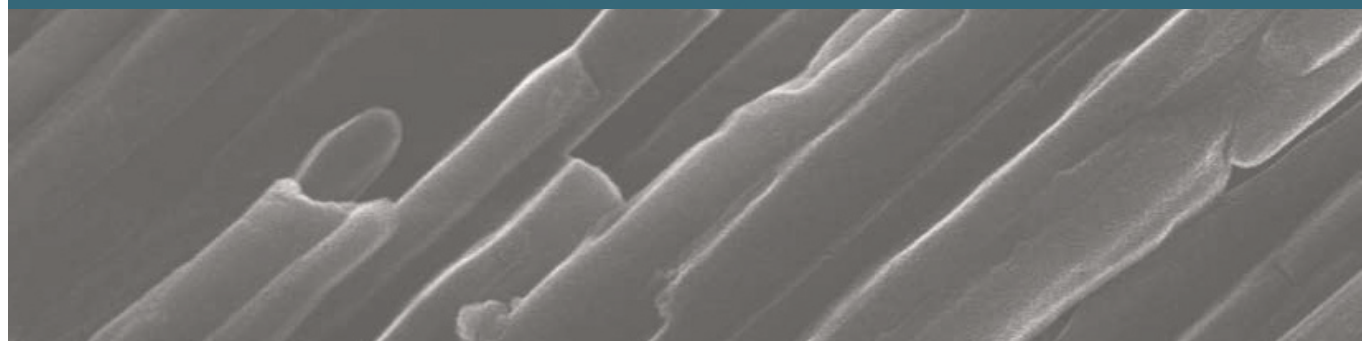
## Triple target sputter coater for specimens up to 200 mm diameter

### Q300T D Plus features

New user interface has been thoroughly updated:

- Dual-core ARM processor for a fast, responsive display
- Capacitive touch screen is more sensitive for ease of use
- User interface software has been extensively revised, using a modern smartphone-style interface
- Comprehensive context-sensitive help
- USB interface allows easy software updates and backing up/copying of recipe files to USB stick
- Process log files can be exported via USB port in .csv format for analysis in Excel or similar. Log files include date, time and process parameters.
- 16 GB of flash memory can store more than 1000 recipes
- Quick and easy creation of process sequences with a simple copy, drag and drop operation

Sea mineral sample 3 nm Cr, Mag x 25 k



Allows multiple users to input and store coating recipes. New feature to sort recipes per user according to recent use.

System prompts user to confirm target material and it then automatically selects appropriate parameters for that material.

Intuitive software allows the most inexperienced or occasional operator to rapidly enter and store their own process data. For convenience a number of typical sputtering and carbon coating profiles are already stored but also allows the user to create their own.

Software detects failure to achieve vacuum in a set period of time and shuts down the process in case of vacuum leak, which ensures pump protection from overheating.

Q300T T Plus has a 200 mm wafer capability



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### Detachable chamber with built-in implosion guard

Removable glass chamber and easily accessible base and top plate allows for an easy cleaning process. Users can rapidly change the chamber, if necessary, to avoid cross contamination of sensitive samples. Tall chamber option is available for improved uniformity for sputtering and to hold larger substrates.

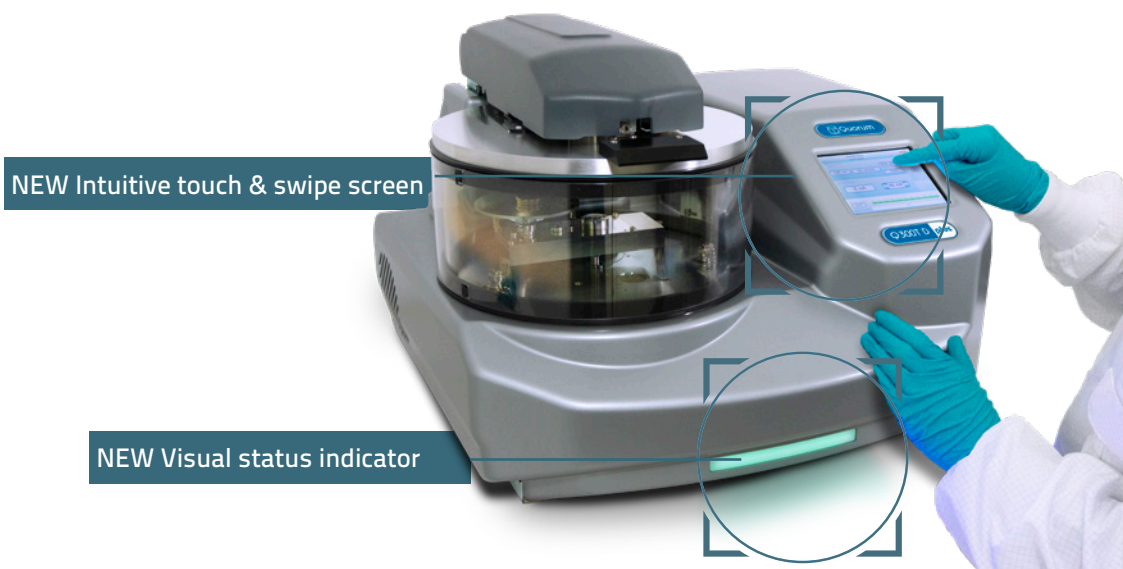
### Triple target sputtering system

The Q300T T Plus is fitted with three individual sputtering heads to ensure even deposition of individual large specimens or multiple specimens. For economical coating of small specimens, 'single target' mode can be selected.

They are ideal coaters for the preparation of large specimens for examination by SEM, FEG-SEM. To ensure even deposition, the Q300 Plus series of coaters are fitted with a rotating specimen stage and three individual magnetron target assemblies, which enhance the efficiency of the process by using low voltages.

### Multiple stage options

The Q300T T Plus has specimen stages to meet most requirements. All are easy-change, drop-in style (no screws) and the rotation speed is variable between pre-set limits. Flat rotation stage for 200 mm/8" and 150 mm/6" wafers (fitted as standard).



### 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, therefore removing the need for manual intervention or control.

### Pulsed cleaning for aluminium sputtering

Aluminium (Al) rapidly forms an oxide layer which can be difficult to remove. The Q300T T Plus has a special recipe for aluminium that reduces the oxide removal time and prevents excessive pre-sputtering of the target.

### Film thickness monitor

The Q300T T Plus can be fitted with an optional film thickness monitor (FTM), which measures the coating thickness on a quartz crystal monitor within the chamber, in order to control the coating thickness of material deposited on to the sample.

### Cool magnetron sputtering

Sputter coating is a technique widely used in various applications; it is possible to create a plasma and sputter metals with high voltage, poor vacuum and no automation. However, this is not suitable for electron microscopy applications because it can heat the sample and result in damage when the plasma interacts with the sample.

The Q Plus series uses low temperature enhanced-plasma magnetrons optimised for the turbomolecular pump pressures, combined with low current and deposition control, which ensures your sample is protected and uniformly coated.

The Q300T T Plus uses easy-change, 57 mm diameter, disc-style targets which are designed to sputter oxidising and noble metals. The Q300T T Plus is fitted as standard with a chromium (Cr) sputter target. Other target options include; Au, Au/Pd, Pt/Pd, Pd, Pt, Cu, Ir, W, ITO and Al etc.



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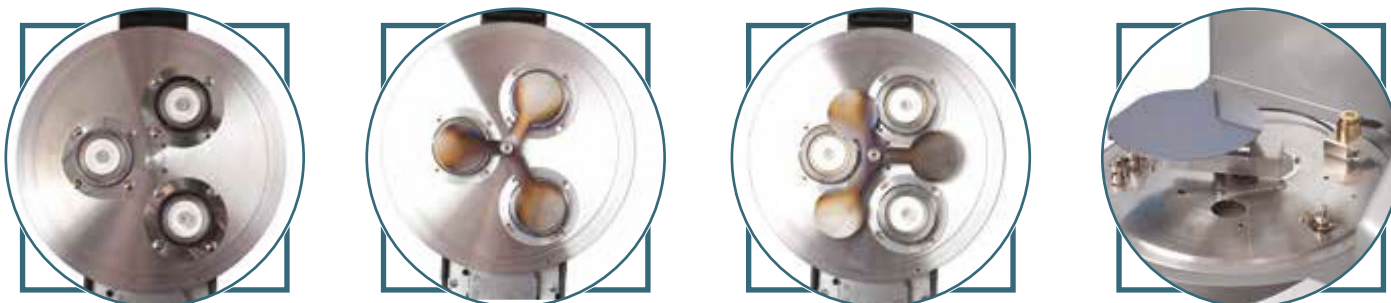
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**Quorum**

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### Triple target sputter head and film thickness monitor option



#### Specifications Q300T T Plus

Instrument case	590 mm W x 535 mm D x 420 mm H
	Maximum height during the opening of the coating head: 772 mm
Weight	36 kg (packed: 59 kg)
Packed dimensions	730 mm W x 630 mm D x 690 mm H
Work chamber	Borosilicate glass with integral PET implosion guard Size 300 mm outside diameter x 127 mm high
Display	115.5 mm W x 86.4 mm H (active area), 640 RGB x 480 (display format), capacitive touch colour display
User interface	Full graphical interface with touch screen buttons, includes features such as a log of the last 1000 coatings and reminders for when maintenance is due
Specimen stage	A flat rotation stage for 6" (150 mm) and 8" (200 mm) wafers is fitted as standard. A rotating/tilt stage and the 'rota cota' rotary tilt stage are also options

#### Vacuum

Rotary pump	Rotary pump – 4 m <sup>3</sup> /hr, two stage rotary pump with oil mist filter for the Q300T T Plus
Turbo pump	Internally mounted 70 L/s air-cooled
Vacuum measurement	Pirani gauge as standard, full range gauge available as an option
Ultimate vacuum	5 x 10 <sup>-5</sup> mbar*
Sputter vacuum range	5 x 10 <sup>-2</sup> to 5 x 10 <sup>-3</sup> mbar*

\*Typical ultimate vacuum of the pumping system in a clean instrument after pre-pumping with dry nitrogen gas

#### Processes

Sputter deposition current	
Single target	1 - 140 mA
All targets	60 - 420 mA

#### Services

Gases	process gas argon, 99.999% Nominal 5 psi
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#### Visual status indicator

A large multi-colour status indicator light provides a visual indication of the state of the equipment, allowing users to easily identify the status of a process at a distance.

The indicator LED shows the following states:

- Initialisation
- Process running
- Idle
- Coating in progress
- Process completed
- Process ended in fault condition

Audio indication also sounds on completion of the process.

#### Safety

The Q300T T Plus meets key industry CE standards

- All electronic components are protected by covers
- Implosion guard prevents user injury in event of chamber failure
- Vacuum interlocks remove power from deposition sources to prevent user exposure to high voltage in event of chamber being opened
- Overheating protection shuts down power supply



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