



INTELLIGENT TISSUE SLIDE STAINER

Intelligent Tissue Slide Stainer - ToronTSS™ 550

Intelligent Tissue Slide Stainer ToronTSS™ 550 is an automatic Slide Stainer designed for continuous batch staining in routine histology and pathology workflows. ToronTSS™ 550 uses an embedded PC intelligent control system, touchscreen operation, and a high-speed silent manipulator to support stable, programmable multi-step staining.

This system is built for laboratories that need repeatable staining quality, reduced manual handling, and higher slide throughput. ToronTSS™ 550 built with flexible program editing, real-time synchronous parameter display, self-check and position calibration, and cyclic loading for multiple dyeing racks running at the same time.

ToronTSS™ 550 is a practical fit for hospital pathology labs, histology labs, academic departments, and research environments that want a more efficient Intelligent Tissue Slide Stainer workflow with automated washing, drying, and rack handling.

APPLICATIONS

Intelligent Tissue Slide Stainer - ToronTSS™ 550 Applications

- Histology and pathology laboratories: this Slide Stainer is suitable for routine tissue-slide staining in pathology and histology workflows where sections move through multiple reagent steps before microscopic review. Its programmable multi-step design and continuous batch operation support higher daily staining volume with less operator intervention.
- Hospital and clinical laboratory workflows: ToronTSS™ 550 fits hospital laboratories that need repeatable staining with reduced manual transfer between reagent tanks. The system supports 1 to 4 frames processed simultaneously and automatic cyclic loading, which is useful for steady daily throughput.
- Teaching and academic laboratories: The touchscreen setup, editable programs, and automatic calibration functions also make this Intelligent Tissue Slide Stainer useful for medical colleges and teaching labs that want more standardized slide-preparation workflows.

- Research laboratories: The system also works well in research environments where programmable multi-step staining and consistent rack movement are important for repeatable tissue-slide preparation across different sample types and staining methods.



FEATURES

Intelligent Tissue Slide Stainer - ToronTSS™ 550 Key Features

- Embedded PC intelligent control: ToronTSS™ 550 uses an embedded PC intelligent control system with flexible programming. A single program can run up to 30 steps, which gives users more room to build detailed staining methods.
- High-speed silent manipulator: the system uses a high-speed silent manipulator designed to support higher-quality staining control while keeping movement stable during operation.
- Real-time touchscreen parameter display: the color LCD touchscreen provides real-time synchronous display of multi-direction dyeing parameters and supports adjustable operation directly on the screen.
- Editable and storable staining programs: multiple dyeing programs can be edited, classified, and stored to match different sample types and staining methods. This helps labs standardize repeat procedures while still allowing method flexibility.
- Self-check and position calibration: the system includes self-check and position calibration before use. It can issue warnings if calibration errors cannot be corrected, which supports safer startup and more reliable positioning.
- Hydrophobic dyeing frame design: hydrophobic dyeing frames and a high-speed liquid drain-off function are used to help reduce cross-contamination between different staining solutions and lower staining-solution consumption.
- Adjustable air-drying function: the air-drying function uses integrated circuit temperature-control technology and low-voltage, contactless operation. The drying temperature and airflow band can be adjusted for cleaner and more controlled slide drying.
- Constant-pressure dynamic cleaning: the slide-cleaning function uses double valves, including a reduced-pressure valve and an inlet valve, so each slide can be cleaned with constant water flow while helping reduce water use through real-time inlet control.
- Full-automatic cyclic loading: the cyclic loading design allows 4 to 6 dyeing racks to operate synchronously, and the number of racks can be identified automatically during cyclic loading.





THEORY & METHOD

Theory and Method

A Intelligent Tissue Slide Stainer automates the movement of slide racks through a defined sequence of reagent tanks. Each tank is assigned a time value, and the rack advances step by step through staining, washing, differentiation, dehydration, clearing, drying, or related programmed processes until the cycle is complete. ToronTSS™ 550 is designed around that principle, with a single program able to run up to 30 steps.

The system uses a high-speed silent manipulator and embedded PC control to coordinate rack transfer, timing, washing, and drying. ToronTSS™ 550 has hydrophobic dyeing frames, adjustable leachate shaking and mixing, constant-pressure dynamic circulation cleaning, and an adjustable air-drying function, all intended to improve staining consistency and reduce cross-contamination between solutions.

TECHNICAL SPECIFICATIONS

Intelligent Tissue Slide Stainer - ToronTSS™ 550 Technical Specification

Parameter	ToronTSS™ 550
Product type	Intelligent Tissue Slide Stainer / Slide Stainer
Reagent tanks	21, including 2 water washing tanks and 1 drying tank
Reagent tanks available for editing	26
Leachate shaking frequency and mixing	30 Hz, adjustable; 2 times mixing; up/down tank position; 1-4 tank positions can be edited and set
Single-tank processing time	0-10,000 seconds adjustable; no more than 1 second for any two dyeing tanks

Parameter	ToronTSS™ 550
Time of the lifting frame	0.7 seconds
Reagent precision threshold	0-99 adjustable
Leachate retention time	1-30 seconds
Tank volume	550 mL; can be used for 350-500 mL dye solution
Drying tank temperature	Room temperature to 70°C
Dye flux	About 120-300 pieces/hour, depending on the dyeing procedure
Water washing mode	Flow-type automatic water washing; flow adjustable; water pressure adjustable
Number of dyed slides processed by one frame	30 pieces/frame
Number of frames processed simultaneously	1-4 frames
Voltage and frequency	220 V $\pm$ 5 V, 50 Hz (110V is also available)
Power	$\leq$ 400 W, with hot-water power calculated separately
Dimensions	1250 × 500 × 550 mm



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