

C910H Integrated Air Permeability, Puncture and Thickness Testing System

C910H Integrated Air Permeability, Puncture and Thickness Testing System

employs the volumetric method for gas permeability testing and mechanical principles for puncture strength and thickness measurements. It is specifically suitable for the measurement of air permeability, puncture strength, and thickness of battery separators.



Product Features ^{Note 1}

Fully Automatic High-Precision Air Volume Determination Method

- Fully automatic measurement of air volume passing through the sample, completely eliminating the traditional manual sliding-cylinder air volume determination method.
- Adopts fully automatic pressure control technology, with pressure accuracy superior to 0.01 kPa.
- Test pressure can be freely and flexibly set through the software.

Contact-type Thickness Measurement Method

- Equipped with a cemented carbide spherical measuring head, offering excellent wear resistance.
- Sliding durability exceeds 100 million cycles.
- The sensor adopts a photoelectric transmissive linear grating scale.

Mechanical-type Puncture Strength Measurement Method

- Force accuracy exceeds Grade 0.5 with superior repeatability.
- Servo drive system, precision ball screw, stepless speed adjustment, and high-precision speed control.
- Pneumatic sample clamping saves time and labor while ensuring consistent clamping force.

Integrated Measurement with Automatic Sample Feeding

- Integrated detection of air permeability, puncture strength, and thickness, saving labor and improving efficiency.
- The scanning function realizes automatic identification and recording of samples.
- Dual positioning design effectively reduces sample feeding deviation.

Intelligent Control & Reliable Performance

- 12.1" embedded touchscreen tablet computer running Windows OS.
- Sensors, servo motors, and pneumatic system used are sourced from world-renowned international brands, delivering stable and reliable performance with a low failure rate and extended service life.
- Automatic ambient temperature and humidity monitoring with real-time recording of test conditions.
- Air permeability testing supports multiple display units such as s/100 mL and $\mu\text{m}/(\text{Pa}\cdot\text{s})$ to meet the varied requirements of different standards.
- Software supports multi-level permission management and audit trail functions (optional).

Test Principle

Air permeability performance is tested in an environment with controlled temperature, humidity, and normal atmospheric pressure. The test measures the time taken for 100 mL of air to permeate through an area of 6.45 cm² of the separator sample under a pressure of 1.21 kPa applied by the instrument.

Reference Standards ^{Note 1}

ISO 5636, TAPPI T460, GB/T 36363-2018, GB/T 458-2008, GB/T 23227, GB/T 12655

Test Application ^{Note 1}

Basic Applications	Air Permeability	Suitable for air permeability testing of battery separators, breathable films, and various other materials, as well as related polymer products.
	Thickness	Suitable for thickness measurement of battery separators, breathable films, and various other materials, as well as related polymer products.
	Puncture Strength	Suitable for puncture strength measurement of battery separators, breathable films, and various other materials, as well as related polymer products.

Technical Parameters

Table 1: Test Parameters ^{Notes 2}

Parameters/Model		C910H
Measuring Range of	s/100 mL	30 ~ 1500
Air Permeability	$\mu\text{m}/(\text{Pa}\cdot\text{s})$	0.1 ~ 4

Volume Resolution	mL	0.001
Volume Precision	mL	1%
Pressure Range	kPa	0 ~ 2
Pressure Precision	kPa	0.01
Thickness Measuring Range	mm	0 ~ 2
Resolution	um	0.1
Repeatability	um	0.5
Measuring Range of Puncture Strength	N	0.1 ~ 50
Resolution	N	0.001
Strength Value Precision	%	±0.5 (Reading)
Test Speed	mm/min	0-500 (Any integer)
Speed Accuracy	%	±0.5 (Reading)
Measuring Interval	mm	0~600
Sample Feeding Speed	mm/s	0~50
Extended Functions	GMP Computer System Requirements	Optional
	DataShield™ Data Shield ^{Note 3}	Optional
	CFR 21 Part 11	Optional

Table 2: Technical Specifications

Test Cell	1 set
Sample Size	4" x 40" (10cm×100cm)
Sample Thickness	≤80 mil (2 mm)
Measuring Area	1 in ² (6.4cm ²)
Thickness Measuring Head	1 set
Head Diameter	Φ3 mm (spherical)

Measuring Head	< 0.8N
Pressure	
Puncture Fixture	1 Set
Fixture Inner Diameter	Φ50mm
Puncture Needle	
Diameter	Φ1mm
Air Source Specifications	Dry air (air source is provided by the user)
Air Source Pressure	72.5 PSI~101.5 PSI / 0.5 MPa~0.7 MPa
Port Size	Φ6 mm polyurethane pipe
Dimensions	29.9" H x 17.7" W x 21.7" D (76cm x 45cm x 55cm)
Power Supply	120 VAC ± 10%, 60 Hz / 220 VAC ± 10%, 50 Hz (select one from the two)
Net Weight	187 lbs (85 kg)

Table 3: Product Configuration

Standard Configuration	Main unit, embedded tablet computer, professional software, Φ6 mm polyurethane pipe
Optionals	Air compressor, CFR 21 Part 11, GMP computer system requirements; DataShield™ Data Shield ^{Note 3}
Remarks	The compressed air inlet of this unit uses a Φ6 mm polyurethane pipe (72.5–101.5 PSI/0.5–0.7 MPa). Air source is provided by the user.

Note 1: The reference standards, test applications, and product specifications shall all follow the specific descriptions in the "Technical Parameters". "Reference Standards" refer to the testing method that is substantially consistent with the method described in the standards.

Note 2: All parameters in the table were measured in the Labthink laboratory by professional operators under the required conditions and in accordance with relevant laboratory environmental standards.

Note 3: The DataShield™ Data Shield System provides secure and reliable data application support that can be shared across multiple Labthink products. Please purchase optionally based on your needs.

Note: Labthink is committed to continuous innovation and improvement of product performance and functions. For this reason, product technical specifications and appearance are subject to change without prior notice. The company reserves the right to make modifications, and the final right of interpretation.