i-Hydro 7900 Water Vapor Transmission Rate Testing System

- Online Data Management System for Packaging Testing- The ultimate cloud computing technology for test data processing and management
- Designed with embedded computer control system and intelligent operating software
- Can be used for plastic films, composite films, sheets, high-barrier materials, and waterproof materials as well as bottles, pouches, cans and boxes made from plastics, rubber, paper, glass and metal materials.
- Conforms to ASTM, ISO, JIS, and other international standards

Online data management system for packaging testing

Comes with two versions to meet distinct needs of our clients:

The Cloud Version

- Consist of 6 functional modules: Test Management, Target Management, Instrument Management, File Management, Settings, and Online Support
- Cloud services: storage, calculation, and analysis of mass test data
- Automatically upload original test data to the cloud server to guarantee data security
- Intelligent statistical analysis of test results
- Easily accessible through the internet on PCs, laptops, mobile phones, and other devices anywhere and anytime, to check and review real time test results and historical test reports, as well as analytical graphs and statistical information

The Intranet Version

- Featured with storage space for vast data, correlation analysis, trend analysis, and statistical analysis of test data, as well as report printing and data export functions
- Easily accessible via computers through Intranets
- “One Click Upgrade” to the powerful “Cloud Version”

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Functionality

- Built-in high precision infrared detection sensor effectively ensures the accuracy of test results
- Standard, proportional and continuous test modes facilitate the instrument for permeability test of materials with distinct barrier properties
- System supports both film and package tests to meet different test requirements (accessories for package test can be customized)
- Three independent test cells can be used to measure three pieces of identical or distinct samples in each test, which greatly improves test efficiency.
- Bidirectional constant temperature control, and constant humidity control to support various non-standard test conditions
- Convenient fast-access calibration ports for temperature and humidity
- Reference film for fast and accurate calibration

Design

- Patented design of three integrated test cells improves the test efficiency and reduces the space occupancy of the instrument
- Embedded computer control system provides safer and more reliable data management as well as test operation
- The instrument can be easily operated with a mouse, a keyboard, and a monitor, without requiring a PC.
- The instrument is equipped with four USB ports and dual Internet ports for convenient data transmission.
- Sophisticated energy consumption and test environment monitoring and analysis functions for better test accuracy and reliability. (Relevant sensors are needed. For more information, please refer to the configuration in Technical Specifications.）
- Universal power input for easy access.

Software

- **Interface:** Windows-based operating interface
- **Statistics:** easy calculation for historical results, instrument usage, energy consumption, and large statistical information
- **Data Comparison:** by presetting target value and range, the system automatically generates data comparison after each test and intelligently judges whether the specimen passes or fails the test
- **Test Report:** can provide detailed test reports in various customized patterns
- **Energy Consumption and Test Status Monitoring (Additional Sensors Required):** the system monitors and displays real-time voltage, current, energy consumption of instrument as well as ambient temperature and relative humidity during the test, which serves to evaluate test data reliability
- **User Management:** multi-level account management for better data management and protection
- **Operation Log:** system automatically records all the operations by the user, which is easy to review

Test Principle

- Infrared detection sensor method is used by i-Hydro 7900 Water Vapor Transmission Rate Testing System. The test specimen is mounted in the diffusion cell, which is subsequently divided into a dry chamber and a controlled-humidity chamber. The dry side of the specimen is swept by a flow of dry nitrogen, and the water vapor permeating through the specimen from the controlled-humidity chamber is carried by dry nitrogen to the infrared sensor where proportion electrical signals will be generated. The water vapor transmission rate is obtained by analyzing and calculating the electrical signals. For package samples, dry nitrogen flows inside the package, and moisturized nitrogen flows outside.

- This instrument conforms to the following standards:
  ASTM F1249, ISO 15106-2, GB/T 26253-2010, TAPPI T557, JIS K7129

Applications

This instrument can be used to measure water vapor transmission rate of the following materials:

Basic Applications	Films	Including plastic films, plastic composite films, paper-plastic composite films, coextruded films, aluminized films, aluminum foils, aluminum-foil composite films, and many others
	Sheeting	Including various engineering plastics, rubber, and building materials, e.g. PP, PVC, and PVDC sheets
	Paper and Paper Board	Including paper and paper board, e.g. aluminized paper and paper-plastic-aluminum composite sheets for cigarette packages
	Packages	Including plastics, rubber, paper, paper-plastic composite, glass, and metal packages, e.g. Coke bottles, peanut oil packages, Tetra Pak packages, vacuum bags, metal three-piece cans, soft tube packages for cosmetic and toothpaste, and jelly cups
Extended Applications (Additional Accessories Required)	Package Caps	Test water vapor transmission rate of different package caps
	LCD Monitor Films	Used for WVTR test of LCD monitor films
	Solar Back-Sheets	Used for WVTR test of solar back sheets
	Plastic Packages for Drugs and Health Care Products	Test water vapor transmission rate of plastic bottles for drug and health care products , e.g. eye drop bottles, infusion bags and health care product packages
	Plastic Pipes	Including various sorts of pipes, e.g. PPR
	Blister Packs	Including blister packs for pharmaceutical products
	Aseptic Wound Protection Films and Medical Plaster Patches	Including aseptic wound protection films and medical plasters
	Fuel Tanks of Cars	Plastic fuel tanks are widely used in cars for its light weight, buffering vibration and easy molding characters. But its fuel permeability is the most essential factor. This instrument can be used to test the permeability of plastic fuel tanks

	Battery Plastic Shell	Battery electrolyte is protected by the plastic shell against outside environment. Battery service life is directly depended on its water vapor permeability. This instrument can be used to test water vapor transmission rate of battery plastic shell
	Paper Cups and Bowls	Test water vapor transmission rate of finished packages for instant noodles, disposable paper cups and bowls

Technical Specifications

	Items	Film Test	Package Test (Optional)
Test Specs	Test Range	0.01 ~ 40 g/m²·24h (Standard) 0.1 ~ 1000 g/m²·24h (Optional)	0.0001 ~ 0.2 g/ pkg·d
	Resolution	0.002 g/m²·24h	0.00001 g/ pkg·d
	Number of Specimens	3 pieces (with independent test results)	
	Extension	9 satellite bases (1-30 specimen tests)	
	Specimen Size	108 mm x 108 mm	Temperature control for one package test: < Φ180 mm, Height < 380 mm
			Temperature control for 3 package test: < Φ100 mm, Height < 380 mm
			No size limitation for tests without temperature control
	Specimen Thickness	≤3 mm	/
	Test Area	50 cm²	/
	Test Temperature	15 °C~55 °C (Standard)	
	Accuracy	±0.1 °C (Standard)	
	Test Humidity	0% RH, 35% RH~90% RH, 100% RH	
	Accuracy	±1% RH	
	Carrier Gas	99.999% high purity nitrogen (outside of supply scope)	
	Carrier Gas Flow Rate	0 ~ 200 mL/min	
Environment Monitoring Specs (Optional)	Voltage Monitoring Range	AC 0~250 V, with ±0.5% accuracy	
	Current Monitoring Range	0~15 A, with ±0.5% accuracy	
	Energy Analysis Accuracy	±0.5%	
	Environmental Temperature Monitoring Range	-10 °C ~ 55 °C, with ±0.1 °C accuracy	
	Environmental Humidity	0~100% RH, with ±2% RH accuracy	

	Monitoring Range	
Other Specs	Gas Supply Pressure	0.28 MPa, 40.6 psi
	Port Size	1/8 inch Copper Tubing
	Instrument Dimension	690 mm (L) x 350 mm (W) x 360 mm (H)
	Power Supply	AC (85~264) V (47~63) Hz
	Net Weight	71 kg
Configurations	Standard	Mainframe (including Wireless Data Interface), Professional Software, LCD Monitor, Keyboard, Mouse, Precision Pressure Regulator, Gas Inlet Pipe and Connector, Diamond Sample Template, Vacuum Grease, Sponge Cushion
	Optional	Environment Monitoring Sensors （including voltage, current, and humidity sensors）, Accessories for Package Test, Temperature Control Device, Reference Film, Package Mouth Sealing Accessories, Sample Cutter, Vacuum Grease, Printer (compatible with PCL3.)
	Online Data Management System for Packaging Testing	Wireless Data Transfer Module, High Gain Antenna

Note: 1. The gas supply port of the instrument is 1/8 inch copper tubing;
2. Customers will need to provide gas supply and distilled water.

Please Note:

- ❖ Pictures used are for illustration purposes only and may differ from the actual product received.

- ❖ Labthink International is always dedicated to the innovation and improvement of product performance and function. Therefore, technical specifications are subject to change without further notice. Please visit our website at www.labthink.com for the latest updates. Labthink International reserves the rights of final interpretation and revision.