



Product Overview

The Intelligent Automatic Asphalt Penetrometer is a precision laboratory instrument designed for determining the penetration value of bituminous and asphalt materials. The system combines advanced displacement sensing, automatic needle positioning, integrated temperature control, and intelligent data processing to deliver accurate, repeatable, and standards-compliant test results for quality control, research, and material evaluation laboratories.

Key Features

Touch Screen Operation

- User-friendly color touch screen interface.
- Intuitive navigation for parameter setting, test execution, and data review.
- Real-time display of test status and results.

High-Precision Automatic Needle Adjustment

- Stepping motor driven lead screw mechanism.
- Fast and accurate needle positioning.
- Smooth lifting and lowering of needle assembly for efficient testing.

Integrated Constant Temperature Water Bath

- Built-in semiconductor refrigeration system.
- Integrated cooling module, heating element, and water circulation system.
- Maintains highly stable testing conditions with temperature control accuracy of $\pm 0.1^{\circ}\text{C}$.
- Eliminates the need for external temperature control equipment.

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



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Precision Needle Assembly

- Manufactured using professionally calibrated standard needles.
- Needle mass strictly controlled to 2.5 ± 0.05 g.
- Needles are periodically verified by independent third-party laboratories to ensure compliance with testing standards.

Advanced Measurement Technology

- High-precision LVDT displacement sensor.
- Split-structure design eliminates friction during needle penetration.
- Ensures highly accurate penetration measurements and excellent repeatability.

Intelligent Data Processing

- Automatic calculation of:
 - Penetration Index (PI)
 - Equivalent Softening Point (T800)
 - Equivalent Brittle Point (T1.2)
- Automatic result analysis and user prompts.
- Improves testing efficiency and reduces operator calculation errors.

Data Communication & Networking

- Integrated RS-485 communication interface.
- Supports ModBus communication protocol.
- Enables real-time data transfer and laboratory networking.
- Suitable for centralized data monitoring and quality management systems.

Large Data Storage Capacity

- Stores up to 200 test records internally.
- Facilitates historical data review and traceability.

Technical Specifications

| Parameter | Specification |
|--------------------------------|---|
| Test Type | Asphalt/Bitumen Penetration Test |
| Measuring Range | 0 – 450 Penetration Units |
| Displacement Measuring Range | 0 – 50 mm |
| Resolution | 0.01 mm (0.1 Penetration) |
| Relative Displacement Accuracy | ± 0.1 mm |
| Sensor Type | High-Precision LVDT Displacement Sensor |

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| Parameter | Specification |
|-------------------------|------------------------------------|
| Needle Assembly Weight | 2.5 ± 0.05 g |
| Time Control Range | 0 – 60 Seconds (Freely Adjustable) |
| Data Storage Capacity | 200 Test Records |
| Communication Interface | RS-485 |
| Communication Protocol | ModBus |

Constant Temperature Water Bath Specifications

| Parameter | Specification |
|------------------------------|--|
| Temperature Measuring Range | 0.00°C – 50.00°C |
| Temperature Control Range | Low Temperature: Up to 15°C Below Ambient Temperature High Temperature: 50.00°C |
| Temperature Resolution | 0.01°C |
| Temperature Control Accuracy | ≤ ±0.1°C |
| Temperature Control Method | Semiconductor Cooling, Heating and Water Circulation System |

Applications

- Asphalt and Bitumen Testing Laboratories
- Highway and Road Construction Quality Control
- Civil Engineering Research Centers
- Construction Material Testing Laboratories
- Government Testing Agencies
- Educational and Training Institutions
- Petrochemical and Refinery Laboratories

Advantages

- Fully automated testing operation.
- High measurement accuracy and repeatability.
- Integrated temperature-controlled environment.
- Intelligent result calculation and analysis.
- Digital data storage and networking capability.
- Reduced operator intervention and testing errors.
- Suitable for routine quality control and advanced research applications.

Standard Configuration

- Intelligent Automatic Asphalt Penetrometer Unit
- Integrated Constant Temperature Water Bath

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- Precision Needle Assembly
- High-Precision LVDT Displacement Sensor
- Touch Screen Control System
- RS-485 Communication Interface
- Power Supply Unit
- User Documentation



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