PROETI

SOILMATIC TRIAX 4.0

Integrated Advanced Automatic System for Triaxial Soil Testing

The SOILMATIC TRIAX 4.0 is a high-performance, fully integrated automatic system designed for modern laboratories seeking precision, efficiency, and automation in soil consolidation testing. This advanced equipment eliminates the need for manual intervention, ensuring controlled load application with maximum accuracy. Its electromechanical servo-actuation technology optimizes load and displacement uniformity, guaranteeing reliable and repeatable results.

Maximum Productivity: Flexible and Scalable System

Its modular design supports up to four pressure controllers, accommodating various laboratory requirements. This configuration enables multi-pressure permeability testing (three-pressure system) and allows simultaneous sample preparation in saturation and consolidation phases while other tests are underway. This parallel processing capability optimizes testing efficiency and significantly enhances overall laboratory throughput.

Integrated Design: Space-Optimized Solution

By integrating the triaxial press and pressure control system into a single unit, the need for separate devices is eliminated. Its compact and efficient design maximizes laboratory workspace, enhancing organization and operational efficiency without compromising testing capabilities.

Fully Automated: Enhanced Precision, Reduced Testing Time

The system performs the entire test fully automatically, significantly reducing time while ensuring high precision and repeatability. It eliminates the need for manual intervention, delivering reliable and consistent results while minimizing human error.

High Sustainability: Quiet Operation and Simplified Installation

Incorporating a state-of-the-art electromechanical system, it eliminates the need for dead weights and large air compressors, thereby substantially reducing acoustic emissions within the laboratory. This advanced technology minimizes maintenance requirements and offers straightforward installation, optimizing spatial efficiency.

Optimized for Research: 100 kN Capacity and Ø6" Samples

The system supports up to 100 kN, facilitating tests on specimens up to Ø200 mm, ensuring higher sample representativeness. This configuration is particularly suited for research and development (R&D) laboratories, as well as academic institutions, where flexibility in testing and precise sample characterization are essential.

SUPERIOR QUALITY DESIGN:PRECISION ENGINEERING AND HIGH-QUALITY COMPONENTS

High-Performance Sensors

Equipped with high-precision LVDT transducers and high-quality load cells to ensure optimal reliability and accuracy.

Compact Structure

An efficient design that minimizes space impact in the laboratory without compromising performance.

Portability and Flexibility

Equipped with robust casters for easy transportation of the system within the laboratory.

Robust and Adjustable Frame

Designed to provide superior test stability, with precise height adjustment to accommodate varying testing positions and configurations.

Adjustable Display

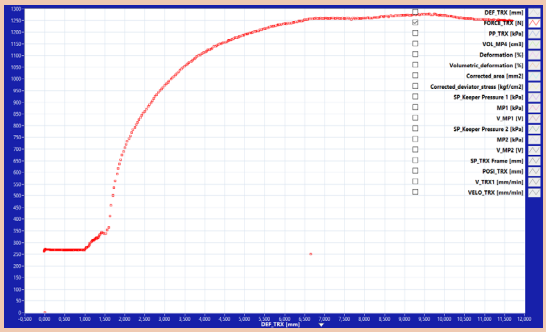
Designed for optimal ergonomics, allowing flexible data visualization from any position within the laboratory, thereby improving user accessibility and operational efficiency.

Pressure Volume Controllers

Supports up to four pressure controllers, strategically positioned to facilitate the concurrent execution of multiple tests.

EDS 2.0 Software

We present the latest version of Soilmatic software for soils: EDS 2.0. Developed by Proeti, EDS 2.0 represents the culmination of over 30 years of expertise in advanced material testing. This upgraded version refines the user interface, optimizes the configuration process, and introduces advanced features that enhance automation capabilities and enable in-depth data analysis.



Enhanced and Intuitive Interface
The EDS 2.0 version features an optimized, user-centric interface with streamlined menus and advanced visual enhancements, enabling rapid and efficient test configuration and setup.

Efficient and Simultaneous Control
The EDS 2.0 software enables the management of tests and the scheduling of preparation phases, such as sample saturation and consolidation, concurrently. This functionality optimizes laboratory productivity, streamlining the overall testing process.

Regulatory Compliance and Customization
Ensures compliance with the highest international standards. Additionally, EDS 2.0 allows users to customize tests and calculations according to specific requirements.

Data Storage and Analysis
All results are automatically recorded and stored. Additionally, graphs and data can be easily exported to Word or Excel files for further detailed analysis.

Enhanced Automation
The system automates the progression of tests between load stages, optimizing productivity and reducing risk by eliminating the need for operator intervention.

Centralized Management
The software supports the simultaneous control and monitoring of multiple units from a single PC, enhancing laboratory workflow efficiency and maximizing operational capacity.

ADVANCED GEOTECHNICAL TESTING VIA SOFTWARE AND AUTOMATION

The machine's integrated software facilitates the efficient and precise execution of a wide range of geotechnical tests. By automating the entire process, manual intervention is eliminated, optimizing testing time and reducing the potential for operator error. This integration of advanced technology and automation not only accelerates test workflows but also ensures high-accuracy results, enabling expedited and in-depth analysis of soil properties.

UNCONSOLIDATED UNDRAINED TEST (UU)
ASTM D2850 | CEN-ISO/TS17892-8
NF P94 070, P94 074 | BS 1377:7

This test measures shear strength based on total stress without allowing sample consolidation, maintaining its structure and water content. The compressive strength depends solely on the geostatic stress of the soil. Typically, three samples are tested under different confinement pressures. When the soil is saturated, shear strength remains constant and is referred to as "undrained shear strength."

CONSOLIDATED UNDRAINED TEST (CU)
ASTM D4767 | CEN-ISO/TS17892-9
NF P94 070, P94 074 | BS 1377:8

This test measures shear strength based on effective stress, using saturated samples that allow consolidation under confinement pressure. At the end of the consolidation stage, a controlled load is applied without drainage, and interstitial pressure is measured. Effective stresses are calculated as the difference between total and interstitial stress. Three samples at different confinement pressures are used to define the failure envelope and the c' and ' parameters according to the Coulomb model.

CONSOLIDATED DRAINED TEST (CD)
ASTM D7181 | CEN-ISO/TS17892-9
NF P94 070, P94 074 | BS 1377:8

This testing method is the same as the CU test, except that the failure stage is conducted very slowly to prevent any change in interstitial pressure within the sample, allowing drainage. The calculations for total and effective stresses, as well as the failure envelope, are the same as those for the CU test.

PERMEABILITY TEST
ASTM D5084 | CEN-ISO/TS17892-11
BS 1377:6

The triaxial permeability test involves the saturation and consolidation of the sample with effective stress, similar to the CD or CU tests. Instead of a failure stage, water flow through the sample is permitted under a predefined pressure difference, and the flow gradient is measured to calculate permeability. Three independent pressure systems are used: confinement, upper drainage, and lower drainage.

STRESS PATH TEST

Ground events such as excavation, construction, or natural occurrences can induce changes in the magnitude and ratio of principal stresses (major and minor). In the stress path test, horizontal and vertical pressures are managed independently, allowing the soil's behavior to undergo anisotropic loading and unloading, which is replicated and measured in the laboratory.

UNSATURATED SOIL TEST

This test simulates the conditions of unsaturated soils, typical in ground above the water table. In this state, the voids between particles contain both air and water, generating negative pressure (suction), which increases soil resistance. Saturation reduces this resistance. The axis displacement method is used, applying air pressure through the upper cap, similar to the pore water backpressure used in saturated tests.