

## DATA SHEET

# Automatic Triaxial Tests System - AUTOTRIAX EmS



Automatic triaxial system AUTOTRIAX 2

## General description

The AUTOTRIAX EmS is an advanced triaxial testing system that can automatically perform up to 6 entire and independent tests at the same time, from start to finish, without any human intervention.

The closed-loop feedback control system monitors the components status continuously, in order to react to any change in the parameter pre-set at each test stage.

Autotriax EmS can perform different kind of triaxial tests, :

- Total and effective stress tests UU (unconsolidated undrained), CU (consolidated undrained) and CD (consolidated drained) isotropic conditions according to ASTM and BS Standards;
- Stress path tests following MIT and Cambridge methods;
- K0 anisotropic volume controlled tests;
- Permeability tests in triaxial cells according to BS 1377: 6;
- Unsaturated soil triaxial test with control of matric suction using the axis translation method.

Also, additional software package available on request for performing:

- CRS – Constant Rate of Strain
- Unconfined compression
- CBR (California Bearing Ratio)

A typical PC controlled fully automatic triaxial configuration includes:

### Load frame

TRITECH 50 kN or 100 kN TRITECH original high-performance load frames for triaxial tests, ideal solution for advanced and research laboratories that want to perform high quality tests at high productivity levels, directly managed by data acquisition and control unit.

### Triaxial cell with accessories:

The proper model can be selected from our range (see triaxial load frame TRITECH and Banded triaxial cells or Double wall triaxial cells required for unsaturated tests) or, as alternative, existing machines can be used.

### Data acquisition and control unit

Data acquisition and control unit transmitting data and information between the software and all the active components, such as pressure controllers and Trittech triaxial load frame.

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### Pressure/volume controller

Four models are available depending on: max pressure capacity (3500 or 1700 kPa) and number of pressure lines (one or two).

### Triaxial test automatic control and processing software.

The AUTOTRIAX EmS software is a comprehensive and user-friendly interface between the operator and the testing system.

The Autotriax EmS configurations can be extended and expanded in subsequent steps, in order to control further tests adding proper components. These operations can be easily made on site just configuring the user-friendly software, as a plug-and-play system.

## Main features

- **24/7 testing without interruption**, maximizing productivity and reducing demands on your staff.
- **Automatic execution of up to six independent triaxial tests** from start to finish with only one PC;
- **Fully PC control system** with multitasking, user-friendly Windows-based, the PC software complies with relevant standards;
- **High-speed PC closed loop control** for continuous monitoring and instantaneous reaction of systems components;
- **Modular design for easy expansion of the system**, just adding proper software packages and components;
- **Maximum flexibility** with four models of water pressure / volume controllers;
- External factors and inconsistencies between different operators are minimized; test procedures are always repeatable and compliant;
- **Banded reinforced triaxial cell** for max working pressure up to 3500 kPa, suitable also for extension tests;
- Compatible with **on-sample transducers and bender elements**;
- **Space saving** design;
- **Air compressor not required** (with exception of unsaturated soils tests).

## Standards

- BS 1377:6
- BS 1377:7
- ASTM D2850
- ASTM D4767
- BS 1377:8
- ASTM D7181
- EN 17892-8
- EN 17892-9

## Specifications

**Maximum no. of simultaneous tests** : 6

**Maximum no. of channels** : 96 (in the most extended configuration)

**Capacity**: 50 kN and 100 kN

**Speed range**: 0.00001 – 99.99999 mm/min

**Specimen range**: 38,50,70,100,150 mm diameter

**Water working pressure**: 1700 or 3500 kPa

**Pressure resolution**: 0.1 kPa

**Maximum capacity of pressure / volume controller** : 250 cc

**Volume resolution**: 0.001 cc

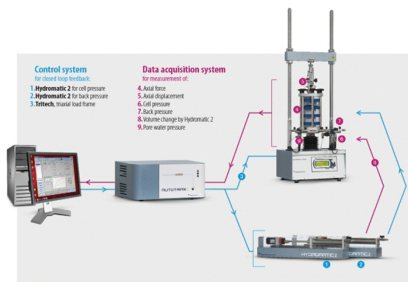
**Effective resolution**: 131000 points

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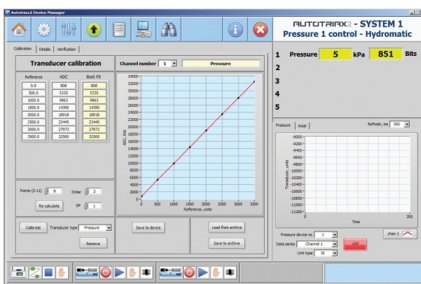
### LAN communication



Up to six independent triaxial testing system controlled by a single PC and software

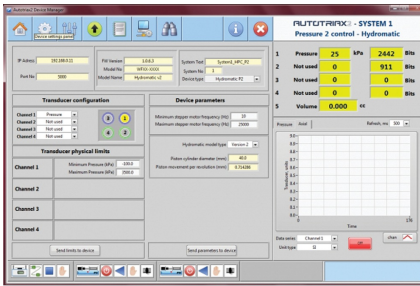


Control for closed loop feedback and data acquisition system for measurement recording

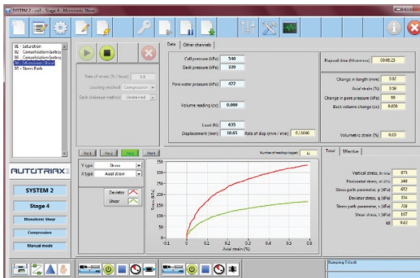


Calibration panel with a completed calibration of a pressure transducer

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Device setting panel for a pressure/volume data acquisition and control device showing settings for the four channels



Deviator and shear stress plotted against axial strain during a monotonic shear stage



System selected panel showing two triaxial systems are available, with one shared Trittech compression frame