TRIAXLAB AUTOMATED SYSTEM

Standards:

Matest TRIAXLAB is an outstanding system specifically designed for advanced soil testing. This system can be used from educational to construction engineering laboratories to reduce to the absolute minimum any form of manual intervention.

Based on the unparalleled performance of CDAS and flexibility of TestLab Software, the new MATEST TriaxLab Automated System is the optimized system to perform fully automatically total and effective triaxial tests such as:
- CD Consolidated Drained test
- CU Consolidated Undrained test
- UU Unconsolidated Undrained test
- Stress path
- K0 tests
- Optional Permeability tests

Main Features:
- Automatic execution of independent triaxial tests from start to finish
- Type of tests: total and effective stress, stress path, K0, optional permeability
- Servo feedback controlled precision pressure (pressurematic) generation system
- Real time graphing and configurable real time transducers
- Pre-programmed user-friendly “Method files” through the TestLab Software
- Compact and versatile for improving productivity and cost effectiveness
- No need of air source
The **TRIAXLAB automated system** basically consists of 3 major groups:

- **Load frame** and **triaxial cell** with accessories

- **Control system** based on the CDAS Control and Data Acquisition System and TestLab Software controlled by PC

- **Data Acquisition System** comprising:
  - 1 load cell for triaxial force
  - 1 displacement transducer for axial displacement
  - 2 pressure transducers for cell Pressure and back pressure
  - 1 pressure transducer for pore pressure
  - 2 pressurematic for volume change

To suit the specific customer’s requirements the MATEST TriaxLab Automated System basic configuration can be modified by adding or removing the hardware elements which are controlled and monitored under a closed-loop integrated system with the CDAS and TestLab Software.

Pre-programmed “Method files” offer the operator the unique opportunity to run a range of tests without the need for specific computer programming. The possibility to customize the Method files is also given to the operator granting ultimate flexibility and versatility.
TRIAXLAB AUTOMATIC SYSTEM

ORDERING INFO:

HARDWARE - SOFTWARE

S301-01
Special digital triaxial load frame 50 kN
Technical Specifications:
- Maximum load capacity: 50 kN
- Infinitesimal testing speed: from 0,00001 to 12 mm/min
- Minimum vertical clearance: 400 mm
- Maximum vertical clearance: 1100 mm
- Horizontal clearance: 380 mm
- Platen diameter: 177 mm

S206
Special CDAS and TestLab Software
Technical Specifications:
- Acquisition 16 Channels 20 bit resolution
- Sampling rate up to 192 kHz (all channels)
- Smoothing up to 64 times over-sampling
- Calibration Automatically on power up
- Control Axis 4
- Communication USB or Ethernet
- Dimensions: 100(h) x 310(d) x 250(w) mm
- Power supply: 90-264 V 50/60 Hz 1 ph 240 W

S305
Triaxial cell max. dia. 70x110 mm
Technical Specifications:
- Max. specimen size: mm Ø 70x140 Ø 100x200
- Max. cell pressure: 1700 kPa 1700 kPa
- Overal dimensions: mm Ø 280x480 Ø 310x540
- Weight: kg 8

S337-41
Load cell 50 kN with signal conditioner calibrated for Triaxlab Automated System

S336-22
Transducer type “A” travel 25 mm calibrated for Triaxlab Automated System

B205
De-airing tank 20 litres capacity
It produces de-aired water when connected to the vacuum pump. It is a perspex tank with an inlet water valve and an outlet air valve. Tank capacity: 20 litres.
Dimensions: 320x320x520 mm
Weight: 15 kg

ACCESSORIES:

S305-05
Mounting device of the universal coupling pliers mod. S335-15 to fix the displacement transducer/dial gauge to the Triaxial Cell mod. S305 or mod. S306

S335-15
Universal coupling pliers to hold the transducer/dial gauge. It fits all Matest displacement transducers and dial gauges (from dia. 8mm to 20mm).

V205
Vacuum pump
To produce vacuum up to of 0,1 mbar (see pag. 487)

V205-10 - V205-12
Vacuum regulator
It is supplied with vacuum gauge, control valve, suction filter and moisture trap.

V230-03
Rubber tube. Suitable for vacuum, 3 m

S336-53
Pressure transducer 2000 kPa with signal conditioner calibrated for Triaxlab Automated System.

S336-55
De-airing block for pressure transducer

S342-03
3 ways water distribution panel
### Recommended typical configuration of the TriaxLab Automated System

<table>
<thead>
<tr>
<th>APPARATUS SECTION</th>
<th>ITEM CODE</th>
<th>ITEM DESCRIPTION</th>
<th>QUANTITY</th>
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<td></td>
<td>S305</td>
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<td>DE-AIRING TANK</td>
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<td>S355-01</td>
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<td>SERVOMATIC PCV</td>
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<td>S336-55</td>
<td>DE-AIRING BLOCK</td>
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<td>S342-03</td>
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<td>S332-04</td>
<td>SPARES AND WEARABLE 1 CELL AUTOMATIC</td>
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MAIN FEATURES:

- **POWERFUL**
  Equipped with Pavetest’s leading edge Control and Data Acquisition System (CDAS) and TestLab Software

- **VERSATILE**
  Designed for routine tests, central laboratories and for research purposes

- **GREAT EFFICIENCY**
  By working in complete automatic mode, it reduces to absolute minimum the manual intervention

- **EASY TO USE**
  The system works via the pre-programmed Method Files

- **FLEXIBLE**
  Multiple triaxial tests with no need for compressed air supply

Triaxlab – Advanced Technology for effective Triaxial Tests
CDAS – Control and Data Acquisition System

Pavetest's compact Control and Data Acquisition System (CDAS) delivers unparalleled performance, real time control and ultimate versatility in acquisition and provide a flexible and user friendly testing solution for soils when coupled with the Matest TriaxLab Automated System.

The CDAS provides excellent waveform fidelity from integrated acquisition and control functions, with low level sampling at speeds of up to 192,000 samples per second simultaneously on all channels (using up to 64x oversampling).

B205 or B206 CDAS models provide an optimized solution for the TriaxLab Automated System. The CDAS works with close synchronization to the Testlab software providing dynamic and precise servo control of the TriaxLab frame, Pressurematic systems. Acquisition and control is provided for:

- Vertical load and displacement
- Confining and back pressure (through the solenoid valve)
- Volume change and water pressures
- Local strain

**Dimension:** 100 (h) x 310 (d) x 250 (w) mm  
**Weight:** 2 kg  
**Power Supply:** 90-264 V 50/60 Hz 1 Ph 240 W

### AVAILABLE MODELS

#### B205 8 CHANNEL CDAS
- **Acquisition:** 8 CH, 20 bit resolution
- **Sampling rate:** up to 192 kHz (all channels)
- **Smoothing:** up to 64 times over-sampling for low noise performance
- **Auto Calibration on power up**
- **Control Axis 2**
- **Communication USB or Ethernet**

#### B206 16 CHANNEL CDAS
- **Acquisition:** 16 CH, 20 bit resolution
- **Sampling rate:** up to 192 kHz (all channels)
- **Smoothing:** up to 64 times over-sampling for low noise performance
- **Calibration automatically on power up**
- **Control Axis 4**
- **Communication USB or Ethernet**

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**MAIN FEATURES:**

- Directly communicates with the Testlab software, providing automatic test execution and data processing
- Compact high reliability data acquisition and control
- Up to 5 kHz data acquisition and feedback control provides excellent waveform fidelity
- Normalized (+/-10V ) analog data acquisition inputs provide flexibility to use any transducer in any channel
- Software and test methods expandable for future requirements
S349 PRESSUREMATIC PVC

Pressurematic is the new solution for geotechnical laboratories demanding automatic pressure and volume control. By using a servo stepper motor directly controlled by the TestLab software and CDAS, Pressurematic allows to build confining pressure and back pressure up to 3500 kPa. The unparalleled performance of the CDAS allows to regulate the pressure under a closed loop control regulated to 0.1 kPa. The operation is continuously monitored by the TestLab software, thus catering to all levels of operator experience. Standard effective stress tests require 2 Pressurematic units: one for cell pressure and the other for back pressure which can be also used to measure the change in volume of the specimen to 0.0003 cc. The latter is provided with a solenoid valve directly installed on the triaxial cell and used to open and close the pressure line whenever it is needed.

**MAIN FEATURES:**
- Compact stainless steel construction
- Powered and controlled by the CDAS and TestLab Software
- Closed loop control up to 3500 kPa
- 0.001 kPa pressure and 0.0003 cc volume resolution
- High volume capacity 250 cc
- Graduated scale for approximate volume change indication
- No need of air source

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**TECHNICAL SPECIFICATIONS:**
- Output pressure: 3500 kPa
- Volume capacity: 250 cc
- Pressure accuracy: 0.25% of full scale
- Pressure resolution: 0.001 kPa
- Volume resolution: 0.0003 cc
- Closed loop control of pressure regulated to 0.1 kPa
- Closed loop control of volume regulated to 0.0003 cc
- Maximum operational speed: 18.5 cc/s

**ACCESSORIES:**

- **S336-51SP**
  Pressure transducer up to 2000 kPa
- **S336-55**
  De-airing block for pressure transducer
- **S342-03**
  3 ways water distribution panel

**DIMENSIONS:**

**WEIGHT:**

**POWER SUPPLY:** 24V DC 1A POWERED FROM CDAS

Graduated scale for approximate volume change indication