Multiplex Universal Electromechanic Test Machine

The UTM-0108.SMPR Multiplex Universal Electromechanic Test Machine is a Servo Controlled Multiplex Machine supplied complete with 50 kN Load Cell (UTGM-0025), 25 mm Linear Potentiometric Transducer (UTGM-0062) and U-Touch Control Unit. 5 kN Loadcell should be ordered separately for Triaxial Tests.

The Frame capacity is 50 kN. This versatile digital loading frame features a microprocessor controlled drive system with an advanced servo motor enabling the operator to easily set any test speed via the coloured touch screen. Touch screen comprises adjustment buttons such as "start", "increase", "automatic", "manual", "down", "up" as well as other user defined test parameters. The testing speed can be set between 0,00001 mm/min to 51mm/min. The test automatically stops when load and/or displacement is reached to 99% value of the set measuring range. See UTM-0108.SMPR pages for details.

Load and displacement values are collected by U-Touch Control Unit and transferred to PC for further processing with the USOFT-2419 software for performing UU and USOFT-2420 software for CU-CD tests.

UTGM-0042 with UTGM-0062

Dimensions	470x600x1180 mm
Weight (approx.)	105 kg
Power	750 W
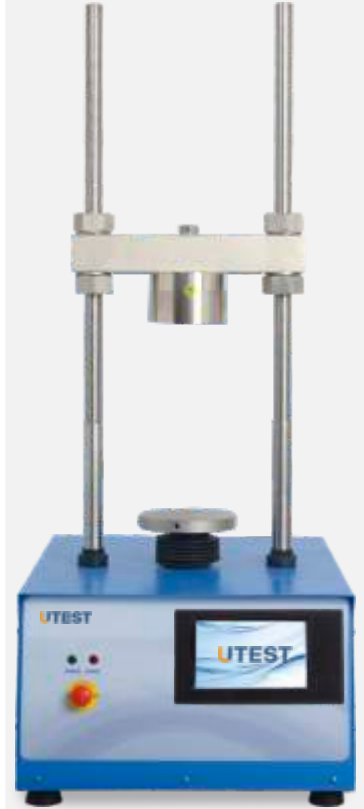
UTM-0108.SMPR

U-Touch Control Units

U-Touch Control Unit is designed to control the machine and processing of data from load-cells, pressure transducers or displacement transducers which are fitted to the machine.

All the operations of U-Touch are controlled from the front panel consisting of color resistive touch screen display and function keys 4 analogue channels are provided for load-cells, pressure transducers or displacement transducers.

U-Touch Control Units has easy to use menu options and displays all menu option listings simultaneously, allowing the operator to access the required option in a seemless manner to activate the option or enter a numeric value to set the test parameters.The digital graphic display of each control unit is able to draw realtime "Load vs. Time", "Load vs. Displacement" or "Stress vs. Time" graphics.

The Control Unit offers many addition unique features. You can save more than 10000 test results in its internal memory. The Control Units can be controlled remotely from anywhere around the world.

MAIN FEAUTURES

• Can make test with displacement control.

• Real time display of test graph.

• 4 analog channels for load cell or pressure sensors or displacement sensors.

• Calibration function for 4 channels.

• Programmable digital gain adjustment for load-cell, pressure transducers, strain-gauge based sensors, potentiometric sensors, voltage and current transmitters.

• Closed-loop for pace rate.

PLEASE see the pages of "General/Data Aqusition and Control Units" for details of the properties of software and hardware of U-Touch PRO Control Unit.

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UTEST
MATERIAL TESTING EQUIPMENT

Soil Triaxial Test Softwares

The CU-CD triaxial test is a complicated test needs load data, diplacement data 3 pressure data from triaxial cell and volume change data. Load data and displacement data are transfered and recorded through U-Touch Control Unit to the software. 3 pressure data from triaxial cell and volume change data transfered and recorded through the interface unit with 4 channel for data acquisition (UTCU-0020) to the software.

The UTEST software USOFT-2420 for CD-CU tests is compatible with interface unit with 4 channel for data acquisition (UTCU-0020) and U-Touch Control Unit. UTCU-0020 can be connected to PC by RS232 port. All channel gains can be set manually and accuracy of the reading can be increased.

Triaxial Software is a modular software that when a new test wanted to do, it directs the user step by step. First the software wants to input initial measurements such as diameter, heigth, sample weigth etc. On this stage the user decides CU or CD test will be done and enters cell pressure increment steps, back pressure differential pressure and effective stress that will be used on consolidation.

After the initialization is completed, the user goes to Saturation Cell Pressure increment stage. Cell presure must be incremented to the pressure entered at initialization stage. During this stage the software calculates B and pore pressure and submits their graph respect to time. When B value saturates this stage must be ended. Generally value of B would not reach to 0.95, therefore a back pressure increment stage must be implemented. On the saturation back pressure increment stage, prior to the start of this stage software commands what back pressure must be applied respect to initial settings. The software draws volume change and pore pressure data during this stage.

Saturation stages can be done recursively at most of 10 cycles. The relevant data of each stage is written to respective files for further investigation and report facilities.

When the saturation is completed the consolidation stage can be implemented. On this stage the software commands to adjust both cell and back pressure to apply effective stress. On the consolidation stage volume change, pore pressure and pore pressure disssipation percent is drawn as graphs.

When the stage is completed, the next stage will be shear stage of CU or CD. The software suggest the shear speed respect to the results found on consolidation stage. Axial displacement and force must be tared prior to the start of shearing.

On the shear stage deviator stress, pore pressure, σ' versus $\sigma'3$ and s' versus t' graphs are drawn. 4 different test specimens can be configured in same file. All the results are used for drawing mohr circles. The data is evaluated with respect to specimen shear end condition. This condition can be selected as constant pore pressure, constant volume change effective prime deviator ratio etc. With the final measurements one set of data is closed.

The raw data can be exported to Microsoft Excel. Without using Microsoft Excel environment all reports can be printout which includes summary of each stage with relevant graphs.

See the pages of "UTEST Softwares" for details of the properties of the software.

UTG-0320

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