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# UNIFRAME 250 Electromechanical Universal Tester, 250 kN Cap.


Uniframe 250 kN

## General description

The machine consists essentially of a robust two column high stiffness frame (200 kN/mm) with an upper crosshead, which is factory-preset at your desired height, and of a lower mobile bi-directional crosshead adjustable by the user using the dedicated push buttton or via the PC software.

The machine features an advanced closed loop PID control system assuring very fast reaction time and extremely accurate test control, particularly important for critical tests, such as those on FRC and FRP specimens. The stress is measured by a load cell incorporated in the upper crosshead and the displacement by a high-resolution encoder with 0.1 micron resolution.
The machine is fitted with two limit switches working at upper and lower full travel and two additional limit switches adjustable by the client in the desired position, according to the specific accessory in use. A remote push-button is used to quickly position the lower crosshead.

The machine is supplied complete with:

- High specs all-in-one PC
- Load cell 250 kN cap. Up to three other cells of lower capacity for tests on low strength materials can be connected (for not simoultaneous use)
- Adapters to connect main accessories
- DATAMANAGER Software for compression and flexural tests

## Main features

- Electromechanical Universal testing machine, PC controlled
- 250 kN maximum load in compression, 150 kN in tensile mode
- High accuracy load cell, with up to three other cells of lower capacity that can be connected for tests on low strength materials
- Advanced closed loop control system to improve stability and produce a reliable performance
- Wide range of test application including compression, tension, flexure, splitting and cyclic tests on different construction materials to ensure maximum versatility
- Despite the large testing space, the frame ensures very high stiffness (200 kN/mm), making it ideal for Fiber Reinforced Concrete testing

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- Very fast reaction time and accurate load regulation, essential for FRC-FRP tests
- Various software packages that can be used tailored to specific test method
- Totally flexible: 14 channels are available to connect any desired load/displacement sensor
- Suitable for:
- Tensile tests conforming to EN and ASTM up to 150 kN
- Tests under displacement and strain control on FRC-FRP concrete and Shotcrete
- Marshall stability tests to EN and ASTM
- Duriez tests conforming to EN and NF
- CBR tests conforming to ASTM and EN
- Compression tests on cement, concrete and other materials
- Flexural and tension tests on various materials

## Specifications

**Frame:**

| | |
|---|---|
| Maximum load in compression | 250 kN |
| Maximum load in tension | 150 kN |
| Max. vertical clearance, without accessories | 930 mm |
| Distance between columns | 650 mm |
| Crosshead travel | 400 mm |
| Crosshead displacement resolution | 0.0001 mm |
| Test speed range | 0.0001 to 175 (105 at full load) mm/min |
| Load rate range | 1 to 9999 N/sec |
| Power | 1 kW |
| Overall dimensions (hxlxd) | 2100 x 960 x 800 mm |
| Weight approx. | 600 kg |

**Hardware:**
131.000 points effective resolution
High frequency closed-loop P.I.D. control
Control frequency 500 Hz
Sampling rate 250 Hz
4 channels for load cells (not simoultaneously)
6 channels to measure displacement values with transducers (LVDT, magnetostrictive, potentiometric)
4 channels for strain measurement with strain gauges
High resolution encoder (0.0001 mm)
Memorization of the calibration curve enables sensors to be connected and used immediately
Digital linearization of the calibration curve (multi-coefficient)

**Software:**
DATAMANAGER software (a high specs PC is included) allows remote control of the whole system and the automatic execution of test including: fast approaching, zeroing, test execution, automatic test interruption after specimen failure or achievement of the target set by the user, numerical and graphical management of test results.

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Detail of push button for easy and precise adjustement of the lower crossbeam


Fiber Reinforced Concrete (FRC) Testing


Spherical seat and compression plattens fitted on Uniframe 250 kN

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Tensile jaws model 70-T2502/H complete with grips for round samples 70-T2502/G1

## Products

**70-T2502**

Automatic 250 kN electromechanical UTM machine designed to perform the following tests: - compression, flexure, indirect tensile strength (with Datamanager software module included); - Elastic modulus and Poisson ratio determination on cement and mortar (optional software module required) - energy absorption by displacement/strain controlled test - Fiber Reinforced Concrete (optional software module required); - tensile strength of rebars up to 150 kN (optional software module required); - Marshall, CBR, SCB and Duriez (optional software module required). MAIN FEATURES: - Max capacity: 250 kN in compression and 150 kN in tensile mode - PC controlled (a high specs PC is included) - Horizontal daylight: 650 mm - Actuator travel: 400 mm - High accuracy load cell - High frame stiffness: 200 kN/mm - Motorized crosshead and easy vertical daylight adjustment by remote control panel - Min speed: 0.0001 mm/min - Max speed: 175 mm/min (105 mm/min at full load) - 14 channel for load/displacement sensors - Max vertical daylight: 930mm without accessories- Overall dimensions, mm: 2100(h) x960(w) x 800(d)220V, 50-60 Hz, 1 Ph. HARDWARE AND FIRMWARE - Effective resolution 131000 points - High frequency PID closed loop control - Control frequency 500 Hz - Sampling rate 500 Hz - 4 channels for load sensors (load cells or pressure transducers) - 6 channels to measure strain values with potentiometric, LVDT and magnetostrictive (e.g. compressometer 55-C0222/G) transducers - 4 channels to measure strain values with strain gauges - Saving of calibration curves for immediate connection of various sensors - Digital linearization of the calibration by automatic multi-coefficient factor SOFTWARE - Main software allows: * remote control of the whole system and automatic execution of test including: fast approaching, zeroing, test execution, numerical and graphical management of test results, etc. * printing and saving of customized test reports both for single and batch tests in Excel format * multi-language including preset languages and editable local language (latin letters only) * automatic load measurement verification proce- dure including data acquisition and printing of traceable calibration certificates, when the PC is connected to the digital readout unit mod. 82-P0801/E and the suitable reference load cells * the use of 4 software packages each one tailored for a specific test method - DATAMANAGER software package (included) for compression, indirect tensile, 3 points and 4 points flexural tests on different types of specimens - E-MODULE software package (optional code 82-T2502/EM) for Elastic modulus and Poisson Ratio determination on cement and mortar allowing: * Free unlimited programmable load/stress cycles to fulfil any kind of test procedure * Real time monitoring of test data, stress/time, stress/axial strain, stress/lateral strain graphs * Automatic verification of sample positioning and sensors functionality, as per standards requirements - D-Control software package (optional code 82-T2502/DC) for displacement controlled tests allowing: * Automatic calculation of test results accor- ding to EN 14651, 14488-3, UNI 11039-2, ASTM C1609, C947 * 8 pre-set testing procedures according to the above Standards * Customizable test procedure allowing programmable loading history * Possibility to change in real time the test parameters: target load/displacement, control variable, test speed. * Data saving rate 250/sec - UTS software package for steel tensile testing (optional code 82-T2502/UTS) allowing: * load/stress control * simultaneous display of: stress/elongation,

**70-T2504**

Automatic 250 kN electromechanical UTM machine designed to perform the following tests: - compression, flexure, indirect tensile strength (with Datamanager software module included); - Elastic modulus and Poisson ratio determination on cement and mortar (optional software module required) - energy absorption by displacement/strain controlled test - Fiber Reinforced Concrete (optional software module required); - tensile strength of rebars up to 150 kN (optional software module required); - Marshall, CBR, SCB and Duriez (optional software module required). MAIN FEATURES: - Max capacity: 250 kN in compression and 150 kN in tensile mode - PC controlled (a high specs PC is included) - Horizontal daylight: 650 mm - Actuator travel: 400 mm - High accuracy load cell - High frame stiffness: 200 kN/mm - Motorized crosshead and easy vertical daylight adjustment by remote control panel - Min speed: 0.0001 mm/min - Max speed: 175 mm/min (105 mm/min at full load) - 14 channel for load/displacement sensors - Max vertical daylight: 930mm without accessories-

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Overall dimensions, mm: 2100(h) x960(w) x 800(d)110V, 60 Hz, 1 Ph. HARDWARE AND FIRMWARE - Effective resolution 131000 points - High frequency PID closed loop control - Control frequency 500 Hz - Sampling rate 500 Hz - 4 channels for load sensors (load cells or pressure transducers) - 6 channels to measure strain values with potentiometric, LVDT and magnetostrictive (e.g. compressometer 55-C0222/G) transducers - 4 channels to measure strain values with strain gauges - Saving of calibration curves for immediate connection of various sensors - Digital linearization of the calibration by automatic multi-coefficient factor SOFTWARE - Main software allows: * remote control of the whole system and automatic execution of test including: fast approaching, zeroing, test execution, numerical and graphical management of test results, etc. * printing and saving of customized test reports both for single and batch tests in Excel format * multi-language including preset languages and editable local language (latin letters only) * automatic load measurement verification proce- dure including data acquisition and printing of traceable calibration certificates, when the PC is connected to the digital readout unit mod. 82-P0801/E and the suitable reference load cells * the use of 4 software packages each one tailored for a specific test method - DATAMANAGER software package (included) for compression, indirect tensile, 3 points and 4 points flexural tests on different types of specimens - E-MODULE software package (optional code 82-T2502/EM) for Elastic modulus and Poisson Ratio determination on cement and mortar allowing: * Free unlimited programmable load/stress cycles to fulfil any kind of test procedure * Real time monitoring of test data, stress/time, stress/axial strain, stress/lateral strain graphs * Automatic verification of sample positioning and sensors functionality, as per standards requirements - D-Control software package (optional code 82-T2502/DC) for displacement controlled tests allowing: * Automatic calculation of test results accor- ding to EN 14651, 14488-3, 14488-5, UNI 11039-2, ASTM C1550, C1609, C947, UNE 83515 * 8 pre-set testing procedures according to the above Standards * Customizable test procedure allowing programmable loading history * Possibility to change in real time the test parameters: target load/displacement, control variable, test speed. * Data saving rate 250/sec - UTS software package for steel tensile testing (optional code 82-T2502/UTS) allowing: * load/stress control * simultaneous display of: stress/elongation,

## Accessories and consumables

**50-C0050/CAL**

Special calibration of load digital readout unit assuring class 1 from 1% of testing machine full scale (maximum load)
**70-T2502/CMU**

ROAD PC software package suitble for Marshall, CBR, Indirect Tensile, SCB, Duriez and Custom tests.
**70-T2502/DC**

D-Control software package for energy absorption, displacement/strain controlled tests.

**70-T2502/EM**

E-MODULE software package for Elastic modulus and Poisson ratio determination.

**70-T2502/FL**

Lower crossbeam for flexure test (rollers not included). Max span between rollers 650mm. Suitable for 70-T250X.
**70-T2502/G1**

Grips for round specimens 7 to 14 mm dia. Suitablefor 70-T2502/H.
**70-T2502/G3**

Grips for flat specimens 0 to 8 mm. Suitable for 70-T2502/H.
**70-T2502/G4**

Grips for flat specimens 8 to 15 mm. Suitable for 70-T2502/H.
**70-T2502/H**

Upper and lower tensile heads to be completed withgrips for round and flat specimens 70-T2502/GX. Suitable for 70-T250X
**70-T2502/UTS**

UTS software package for rebars tensile testing.

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## 70-T2502/2

Spherical seat and compression platens dia. 165mm suitable for 70-T250X.