

## DATA SHEET

# AUTOMAX MULTITEST Computerized Control Console



50-C20M82 AUTOMAX MULTITEST controlling a 3000kN EN compression frame, 15/300 kN compression/flexure cement frame and a 350 kN flexure frame

## General description

**AUTOMAX Multitest** represents a step change in versatility that allows modular upgrades from basic failure tests up to advanced displacement controlled tests.

The system in fact offers step-by-step flexibility to build your testing system to cover possible future testing needs. The console is supplied with DATAMANAGER software for standard failure tests to EN and ASTM, but with additional frames, accessories and dedicated software packages, your system can easily perform many tests including:

- Modulus of Elasticity and Poisson Ratio determinations (with optional software package 82-SW/EM)
- Tension on steel rebar (with optional software package 82-SW/UTS)
- Displacement controlled tests for FRC/Shotcrete characterization (with optional software package 82-SW/DC)

See Accessories

## Main features

- **Suitable for any kind of test** from basic failure tests (compression, flexure, splitting, tension) through cyclic tests for elastic modulus and poisson ratio determination up to advanced displacement controlled tests
- **Suitable for any type of sample**, can be connected up to 4 frames ranging from 15 kN up to 5000 kN in compression and 500 kN in tension
- **Suitable for any budget**: the machine can be upgraded in step-by-step investments by adding suitable testing frames, accessories and dedicated software packages
- **Suitable for any user**: 4 easy-to-use software packages available, each one tailored for a specific test method, guiding the operator through all the test phases
- **Test cycle with closed loop PID control automatically performed by pressing the start button via PC**
- **DC-driven variable speed pump for silent operation, energy saving and highly accurate drop-by-drop oil flow for precise control during complex tests**
- **500 Hz high control frequency for optimum oil pressure adjustment during critical tests**
- **Double frame control, expandable to four, with active frame selection via software**
- **Soft platen-to-specimen contact and smooth load rate control from very beginning of the ramp**

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### Standards

- EN 13398
- EN 12390-4
- ASTM C39
- ASTM C469
- ISO 6784
- DIN 1048
- UNI 6556
- BS 1924:1
- EN 14488-3
- EN 14488-5
- EN 14651
- ASTM C1550
- EN 1338
- EN 12390-13

### Specifications

#### Hydraulics

- Dual stage pump: centrifugal low pressure for fast approach and automatic switching to radial multi-piston high pressure for loading
- DC motor. 720 W, 50-60 Hz
- Maximum working pressure 650 bar
- Third and fourth frame option, active frame selection by software
- Flow-sharing technology to perform loading and unloading cycles
- ES Energy Saving technology to reduce power consumption and silent operation

#### 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 sensors (pressure transducers and load cells)
- 6 channels to measure strain values with transducers (LVDT, magnetostrictive, potentiometric)
- 4 channels for strain measurement with strain gauges
- Memorization of the calibration curve enables sensors to be connected and used immediately
- Digital linearization of the calibration curve (multi-coefficient)

#### PC and software

Main software MULTITEST 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.
- Active frame selection via software
- Printing and saving of customized test reports both for single and batch tests in Excel format
- Multi-language selection, customizable with a further local language (only latin characters).
- Automatic load measurement verification procedure including data acquisition and printing of traceable calibration certificates, when the PC is connected to

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- the digital readout unit mod. 82-P0801/E and the suitable 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, see Accessories) for Elastic modulus and Poisson ratio determination allowing:

Free unlimited programmable load/stress cycles to fulfill 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

Automatic calculation of test results as per Standards requirements

**UTS software package** (optional, see Accessories) for steel tensile testing allowing:

Test control up to yield by:

Stress (method B)

Strain by using extensometer (method A1)

Strain by using crosshead (method A2)

Control after yield by grips' separation

Simultaneous display of: stress/elongation [mm], stress/time; stress/elongation [%] and elongation [mm]/time, with possibility to display multi diagrams

Elaboration of tension test results: ReH, ReL or Rp, fp, Rt, A, At, Ag, Agt, A, At, Ae, E, Z, ft/fy, fy/fynom conforming to EN ISO 6892-1 (methods A1, A2, B) and EN 15630-1

**D-Control software package** (optional, see Accessories) for displacement controlled tests allowing:

Automatic calculation of test results according to EN 14651, 14488-3, 14488-5, UNI 11039-2, ASTM C1550, C1609, UNE 83515

8 test pre-set testing procedures according to the above Standards

Customizable test procedure allowing desired loading history

Possibility to change in real time the test parameters: target load/displacement, control variable, test speed.

### Physical specifications

Power rating: 700 W

Dimensions (d x w x h): 650 x 500 x 1350 mm

Weight approx.: 100 kg



AUTOMAX MULTITEST automatic control console, code 50-C20M82

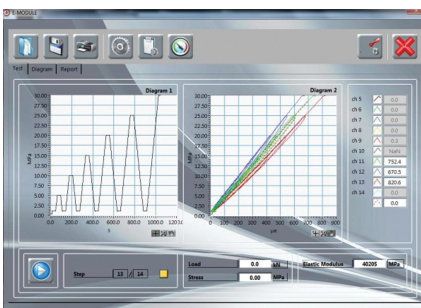
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50-C20M82 AUTOMAX MULTITEST controlling a 3000kN EN compression frame, 500/1000 kN compression/tension frame and a 200 kN flexure frame

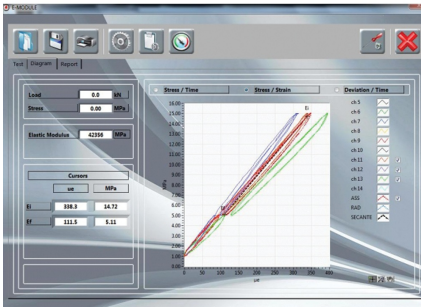


D-Control software, test execution menu with automatic calculation of test results to Standard

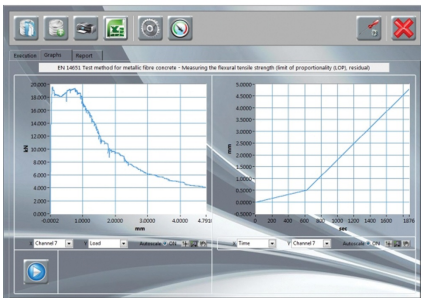


E-module software, Elastic modulus test performed according to customized sequence of steps to fulfill any test procedure

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Detail of stress/strain graph showing measurements of each transducer and average readings (dashed red line)



D-Control software, load/deflection diagram and deflection/time diagrams



50-C20M82 AUTOMAX MULTITEST controlling a 350kN flexure frame for FRC testing

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50-C10D/3F AND 50-C20E/4F hydraulic valves for connection and control of four frames

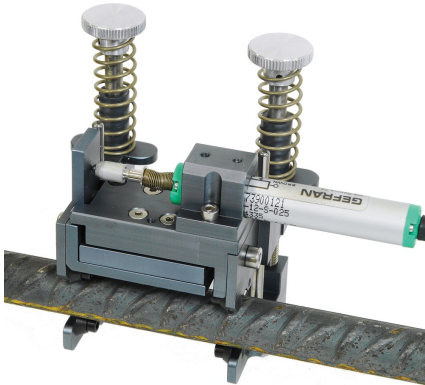


Detail of electronic boards housed in the removable drawer of Automax MULTITEST console



70-C0961/H

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70-C0954/C1

## Products

### 50-C20M82

AUTOMAX MULTITEST computerized control console for up to 2 frames (expandable up to 4) capable to perform the following tests: - compression, flexure, indirect tensile strength (software module included); - Elastic modulus and Poisson ratio determination (optional software module required); - energy absorption by displacement/strain controlled test - Fiber Reinforced Concrete (optional software module required); - tensile strength of rebars (optional software module required). Conforming to EN and ASTM norms. PC included. 230V, 50-60Hz, 1 ph SPECIFICATIONS HYDRAULIC SYSTEM - Max. working pressure 700 bar - Double stage pumping system, high delivery-low pressure for fast approach and low delivery-high pressure for test execution - Hydraulic block suitable for the connection of 2 frames, expandable to 4. - ES Energy Saving technologies for reduction of power consumption and silent operations - FLOW SHARING Technology for the automatic execution of loading and unloading cycles - DC motor 720 W 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. our 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 PC AND SOFTWARE - Main software MULTITEST allows: \* remote control of the whole system and the automatic execution of test including: fast approaching, zeroing, test execution, numerical and graphical management of test results, etc. \* active frame selection via software \* 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 procedure 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 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-SW/EM) for Elastic modulus and Poisson Ratio determination 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-SW/DC) for displacement controlled tests allowing: \* Automatic calculation of test results according to EN 14651, 14488-3, 14488-5, UNI 11039-2, ASTM C1550, C1609, C947, UNE 83515 \* 8 test pre-set testing procedures according to the above Standards \* Customizable test procedure allowing desired 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-SW/UTS) allowing: \* load/stress control \* crosshead separation control \* simultaneous display of: stress/elongation, stress/time; elongation/time with possibility to display multi-diagrams

### 50-C20M84

AUTOMAX MULTITEST computerized control console for up to 2 frames (expandable up to 4) capable to perform the following tests: - compression, flexure, indirect tensile strength (software module included); - Elastic modulus and Poisson ratio determination (optional software module required); - energy absorption by displacement/strain controlled test - Fiber Reinforced Concrete (optional software module required); - tensile strength of rebars (optional software module required). Conforming to EN and ASTM norms. PC included. 110V, 60Hz, 1 Ph SPECIFICATIONS HYDRAULIC SYSTEM - Max. working pressure 700 bar - Double stage pumping system, high delivery-low pressure for fast approach and low delivery-high pressure for test execution - Hydraulic block suitable for the connection of 2 frames, expandable to 4. - ES Energy Saving technologies for reduction of power consumption and silent operations - FLOW SHARING Technology for the automatic execution of loading and unloading cycles - DC motor 720 W HARDWARE AND FIRMWARE - Effective resolution 131000

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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. our 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 PC AND SOFTWARE - Main software MULTITEST allows: \* remote control of the whole system and the automatic execution of test including: fast approaching, zeroing, test execution, numerical and graphical management of test results, etc. \* active frame selection via software \* 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 procedure 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 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-SW/EM) for Elastic modulus and Poisson Ratio determination 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-SW/DC) for displacement controlled tests allowing: \* Automatic calculation of test results according to EN 14651, 14488-3, 14488-5, UNI 11039-2, ASTM C1550, C1609, C947, UNE 83515 \* 8 test pre-set testing procedures according to the above Standards \* Customizable test procedure allowing desired 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-SW/UTS) allowing: \* load/stress control \* crosshead separation control \* simultaneous display of: stress/elongation, stress/time; elongation/time with possibility to display multi-diagrams

## Accessories and consumables

### 50-SW/DC

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

### 50-SW/EM

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

### 50-SW/UTS

UTS software package for rebars tensile testing.

### 50-C10D/3F

Third frame facility for AUTOMAX series. Frame selection via display/PC.

### 50-C20E/4F

Fourth frame facility for AUTOMAX Multitest e and AUOTMAX PRO series. Frame selection via PC.

### 50-D0630/24K

24000 g cap. x 0.1 g resolution, digital balance. Compatible with Link-LAB laboratory connectivity package. 230V/50-60Hz/1ph

### 50-D1650/200K

Digital caliper 200 mm x 0.01 mm. Compatible with Link-LAB laboratory connectivity package KLAB/E

### 50-D1950/K

Barcode reader. Compatible with Link-LAB laboratory connectivity package.

### 50-KLAB/E

Link-LAB Enterprise laboratory connectivity package for machines controlled by PC via DATAMANAGER Software.

### 50-D1650/K1

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Kit for caliper model 50-D1650/xxK including Bluetooth emitter, USB dongle receiver and 1.5m extension cable. Compatible with machines controlled by PC via DATAMANAGER software.

### 50-D1650/300K

Digital caliper 300 mm x 0.01 mm. Compatible with Link-LAB laboratory connectivity package KLAB/E

### 50-D1650/K2

Connection cable for digital caliper 50-D1650/xxxK