# CONTROLS

# AUTOMAX PRO M

Smart, Automatic and Connected
Advanced Concrete Power
and Control Unit

# AUTOMAX PRO M

## Smart, automatic and connected Compact-Line compression machines

The leading-edge high definition 7" color graphical display is easy-to-follow and works like a tablet or smart-phone. This makes it easy to perform test and access the latest international Standards resulting in more rapid training of new staff and higher testing through-put.

■ **Large intuitive graphic color 7" display** similar to tablet or phone (800 x 480 pixel).

■ **Dual user interface** via console display or PC with optional DATAMANAGER software.

■ **Optimum accuracy** is obtained with 19-bit effective resolution (524,000 datapoint) and extended class-1 range.

**Active control of up to 4 frames** with selection via display or PC (no manual operation or valve switching required).

**Variable speed with permanent magnet DC motor** for superior performances at low load rates and low load value. Soft platen-to-specimen contact for more accurate speed control from the very beginning of the ramp.

**High speed pump** closes the daylight above the specimen at the fastest speed for maximum sample throughput.

**Flow-sharing technology** to perform loading and unloading cycles at controlled rate.

**Automatic and seamless reporting to all major LIMS systems** via our DATAMANAGER software.

**6 channels to be factory configured:**

• 2 channels for load sensors

• 2 channels for load or displacement/strain sensors

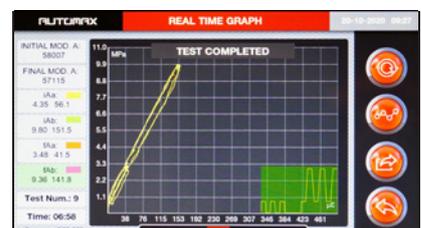• 2 channels for displacement/strain sensors.

**Oversampling function** increasing the sampling rate when specimen is approaching the failure for better identification of peak value.
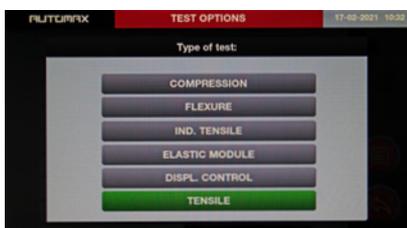
Easily select your test method
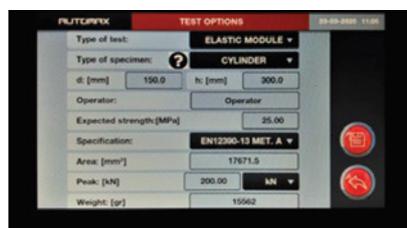
Elastic Modulus test settings

Elastic Modulus determination

AUTOMAX PRO-M Power Control System fitted with superior hydraulics can also perform, in addition to standard failure tests, Modulus of Elasticity Determination tests, characterizations of Fiber Reinforced Concrete (FRC) under displacement-control and tensile tests on steel rebars.

**Automatic performance of Elastic Modulus tests** according to the main International Standards with automatic calculation of tests results.

**Performs displacement-controlled tests** on beams, notched beams, round or square slabs with the appropriate flexure frame.

**Automatic performance of tensile tests and results calculation**
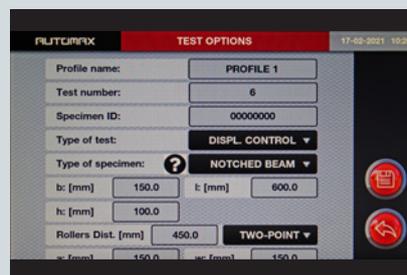
AUTOMAX PRO-M 3000kN EN compression machine for Elastic Modulus determination, control of a second flexure frame for FRC slab testing and third tensile frame for rebars testing.
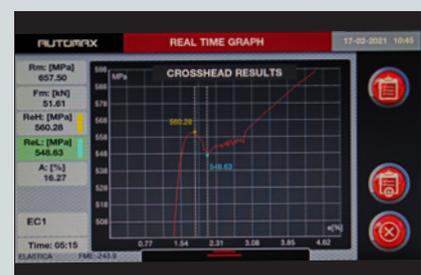
## INTUITIVE GRAPHICAL DISPLAY
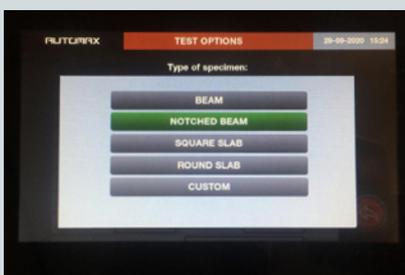
Easily select your specimen type

Diplacement-controlled test settings

Tensile test results

# Smart Connectivity

AUTOMAX PRO-M introduces new features and capabilities that will revolutionize the operations of any progressive construction quality testing laboratories.

**LinK·LAB**
LABORATORY CONNECTIVITY PACKAGE

**LinkLAB** is CONTROLS' new proprietary **Laboratory Connectivity Package** that brings total reliability and transparency to your testing process. It allows your machine to take direct inputs from many ancillary devices, reducing error-prone manual tasks and eliminating transposing errors. The addition of an integrated smart camera for recording your testing ensures that you can deliver unadulterable results that can be easily documented and shared.

## Two models available

**Link-LAB Local**
Available for systems that operate stand-alone using the controller only without a PC.

**Link-LAB Enterprise**
Available for new and existing systems controlled by PC via DATAMANAGER Software.

## Sample Information Acquisition

**Direct acquisition provides a tidier operation eliminating the possibility for data transposition errors.**

Compatible devices include but are not limited to:

✓ calipers
✓ digital balances
✓ ID bar-code readers



## Test Video Recording *

**High Resolution Video Recording**
Fit your compression machine with an integrated high resolution smart camera to record all your testing.

Video recording not only proves that a test has been performed but also provides unalterable test results, raising the bar of reliability and transparency. At the end of a test, easily save your recording and test results in the PC software's archive.

**Automatic Sample Identification**
The SID READER module is an extra tool to be activated in the PC software allowing the smart camera to read and recognize the barcode on a sample.

The sample ID, read by the camera, will be displayed during the test and recorded along with the other data such as data, time, elapsed time, load and strength values.
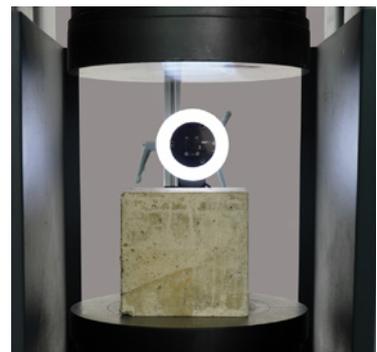


* Only available if your machine is fitted with LINK-LAB Enterprise

# Technical Specifications

## Hydraulics

**Dual stage HPU:** centrifugal low pressure for fast approach automatically switches to radial multi-piston high pressure for loading

**DC motor:** 720 W, 50-60 Hz

**Maximum working pressure:** 700 bar

**Load / unload electrovalve** for test execution via display / PC and automatic stop at specimen failure

**Third and fourth frame option,** control of up to 4 frames by selection via display / PC

**ES Energy Saving technology** to reduce power consumption and promote silent operation

**Flow-sharing technology** to perform loading and unloading cycles

## Hardware

**524.000 points** high-resolution / stability analogue channels

**6 channels to be factory configured:**
- 2 channels for load sensors (pressure transducers and load cells)
- 2 channels for load sensors (pressure transducers and load cells) or displacement / strain sensors
- 2 channels for displacement/strain sensors

**Control frequency:** 250 Hz

**Sampling frequency:** 250 Hz

**7", 800 x 480 px,** 16m colors, icon-driven touchscreen graphic display (like tablet or phone)

**Unlimited storage capacity** for test data on internal 16 GB SD card

**USB port** for test data storage or for firmware upgrade by external USB memory stick

**Ethernet port** for PC / Internet / network communication

**Optional integrated graphic printer** including Load-Time plot (for standard failure tests)

**RS 232 port** for data downloading in ASCII format

## Firmware

Execution of compression, flexure, indirect tensile, ACV tests, Elastic Modulus, Poisson Ratio Determination plus Displacement-controlled tests (with 50-FW/DC) and tensile tests (with 50-FW/UTS) in automatic mode with test speed controlled by a closed-loop PID system.

**Simultaneous display of:**
- load, stress, actual load rate, load / time graph in standard failure tests
- load, stress, strain, stress / strain graph in Elastic Modulus and Poisson ratio tests
- load, displacement, stress / displacement graph in displacement controlled tests (with 50-FW/DC)
- load, stress, displacement and % elongation (crossbeam), displacement and % elongation (extensometer, if connected), stress/% elongation graph in tensile tests (with 50-FW/UTS)

**Saving of the specimen failure type** (to EN or ASTM) in concrete compression tests results

**Download data to internal printer (optional) or to PC** via RS 232 port or to USB memory stick

**Ethernet port** for PC / network communication

**Multi-coefficient linearization** of the calibration curve for better accuracy at low loads avoiding the use of a second pressure transducer.

**Recording facility** for up to nine test profiles for each channel including: type of test (e.g. compression, flexure, splitting, elastic modulus, displacement control or tension), specimen size and shape, test speed and other general information. Each one of the recorded test profiles can be recalled automatically to save time.

**Improved PID algorithm and multi PID selection.** Up to three different PID settings can be tuned for each channel for a variety of materials (e.g. cylinder with neoprene pads, low strength specimens) and test methods (e.g ACV, flexure, elastic modulus, displacement control).

**Compatible with the newly released DATAMANAGER software, E-Module, D-Control and UTS software packages,** tailored for construction material testing laboratories, for remote control, real-time data acquisition and results calculation.

**Peripheral devices integration** with Link-LAB

**Automatic load measurement verification procedure,** by connecting suitable load cells and our digital readout unit to PC

**Language selection** (including Cyrillic and Chinese)

**Unit selection** (kN, ton, lbf )

**USB port** for firmware upgrade and safe backup of the original configuration data (PID, calibration, etc.), in case of loss and / or data corruption. The restore to factory settings function is easy to use and reduces the need of any technical support.

# Technical Specifications

## Upgrading options

### THIRD AND FOURTH FRAME CONNECTION



The AUTOMAX PRO-M system can control two frames as standard and it can be upgraded with a hydraulic valve for controlling (not simultaneously) a third and a fourth frame.

**50-C10D/3F**
Electrovalve for third frame connection.

**50-C20E/4F**
Electrovalve for fourth frame connection.
To be used with 50-C10D/3F.

### SPECIAL CALIBRATION PROCEDURES
**50-C0050/CAL**
Special calibration of load digital readout unit garanteeing class 1 from 1% of testing machine full scale (maximum load).

### FIRMWARE UPGRADE TO PERFORM TENSILE TESTS
**50-FW/UTS**
Firmware upgrade for the automatic tensile test execution according to methods A1, A2 and B to EN ISO 6892-1

> **Important note:** These tests can be performed by using suitable frame and specific accessories. Please ask our technical department for complete configurations.

### FIRMWARE UPGRADE TO PERFORM DISPLACEMENT-CONTROLLED TESTS
**50-FW/DC**
Firmware package to perform displacement-controlled tests with an AUTOMAX PRO-M compression tester.

> **Important note:** These tests can be performed by using suitable frame and specific accessories.  Please ask our technical department for complete configurations.

### SERIAL PRINTER INSTALLATION

AUTOMAX PRO-M systems can be upgraded by incorporating a serial printer in the rear panel with the following specifications:

• Very quiet printing

• High speed: 50mm / sec

• High resolution: 200 dpi = 8 dots / mm

• Supports text and graphic printing

• Easy maintenance with self-diagnostics

• Paper width: 58 mm

The printer allows test results to be printed at the end of the test. Load / time plot of standard failure tests (compression, flexure and indirect tensile) can be printed as well.

**50-Q60P/PR**
Installation of a serial printer on the AUTOMAX PRO-M control panel.

# Technical Specifications

## Software packages

### 82-SW/DM

**DATAMANAGER** software package for compression, indirect tensile, 3 points and 4 points flexural tests on different types of specimens.

### 82-SW/EM

**E-MODULE software package 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.
- Automatic calculation of Elastic Modulus and Poisson's Ratio values.
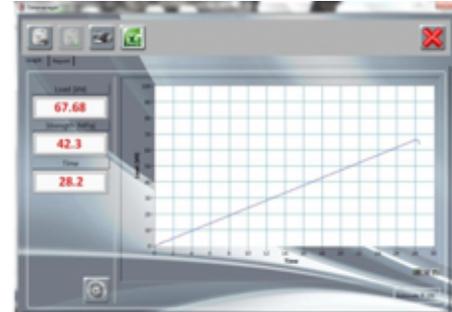
### 82-SW/DC

**D-CONTROL software package for Displacement-Controlled Tests allowing:**
- 8 test pre-set testing procedures according to EN 14651, 14488-3, 14488-5, UNI 11039-2, ASTM C1550, C1609, C947, UNE 83515.
- Automatic calculation of test results 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.

### 82-SW/UTS

**UTS software package for Steel Tensile Testing allowing:**
- 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 test parameters (multi-diagrams display available)
- Elaboration of tension test results in conformity to EN ISO 6892-1 (methods A1, A2, B) and EN 15630-1



82-SW/DM – DATA MANAGER
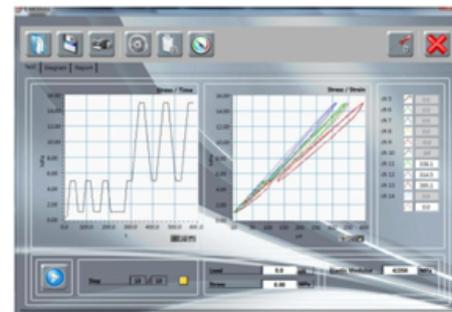


82-SW/EM – E-MODULE
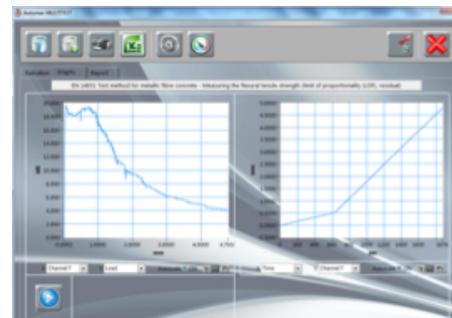


82-SW/DC – D-CONTROL

| AUTOMAX PRO M | | | CAPACITY [kN] | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | | | 1,500 | 2,000 | 3,000 | 4,000 | 5,000 |
| STANDARD | EN | Cubes/Cylinders | - | C46F02/M | C56F02/M | C68F02/M | C78F02/M |
| | | Blocks | - | C47F02/M | C57F02/M | - | - |
| | ASTM* | Cylinders | - | A42F02/M | A52F02/M | - | - |
| | | Blocks | - | – | – | – | – |

Note: For 110V, 60 Hz versions change last code number from 2 to 4. Example: 50-C46F04/M, C56F04/M, C68F04/M.

*These machines can be calibrated in lbf unit. For the codes change second last code number from 0 to 1.

**CONTROLS**

# CONTROLS Customer Care

As one of the longest established manufacturing companies in the world of Construction Materials Testing solutions, we are dedicated to supplying high quality, accurate, affordable, easy to use systems.

As a valued customer of CONTROLS, you will receive continuous, expert support and advice for your equipment. Furthermore, we can offer full installation and training in the correct operation of your CONTROLS equipment.

For support from our expert Customer Care Team, contact your local CONTROLS office / distributor or email **customercare@controls-group.com.**

For more information, please visit **www.controls-group.com.**

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