

Universal Testing Machines

Electromechanical Testing Machines EUROTEST Series

 Capacity: 50 - 2000 kN



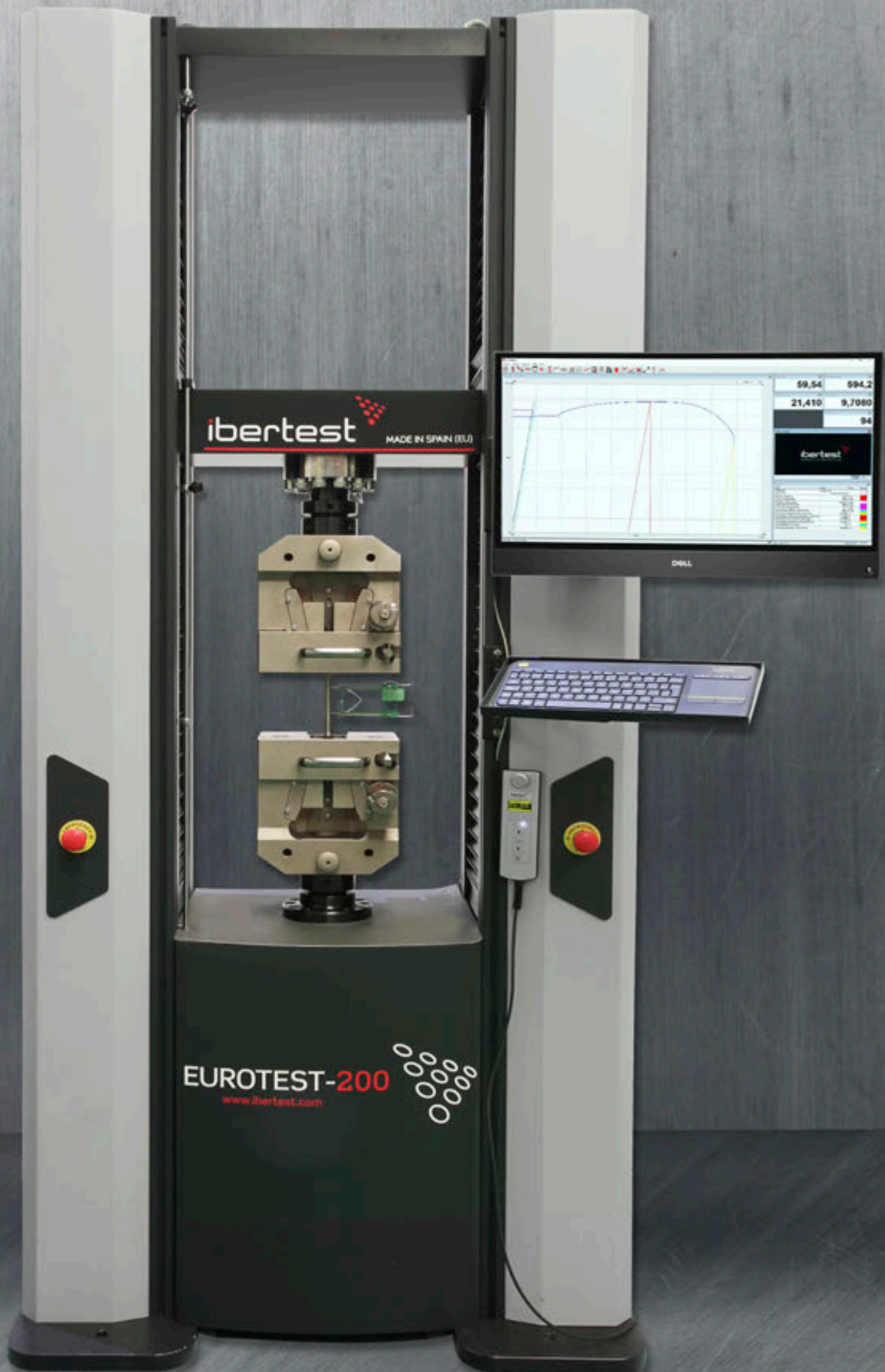
Since 1970
Made in Spain (EU)

www.ibertest.com



NEW DESIGN

of EUROTEST series



Introduction

Third generation of electromechanical universal testing machines manufactured by IBERTEST. Evolution of the ELIB and ELECTROTEST models.

The EUROTEST Universal Testing Machines take advantage of more than 50 years of manufacturing expertise for a multitude of applications and materials.



Eurotest-600 with mechanical gripping heads and high temperature furnace

EUROTEST universal testing machines combine last generation control electronic (MDi series) with a new and versatile design which increases robustness, reliability, versatility and precision.

EUROTEST machines fulfill widely the requirements imposed by international materials resistance standards (mainly EN, ASTM, BS EN, GOST, etc.), as required by the Departments of Quality Control, Certified Laboratories, Universities, Research and Technological centres, etc.

This high quality level is reached only with a studied combination of accurate design, top quality components and final performance verification.

MDi electronics allows to mount additional load cells or strain transducers using connection-plugs with EEPROM memory.

Calibration data (units, zero setting, range, corrections, etc.) are included in the plug memory, so the system auto-

matically recognizes the transducer without human intervention. This system avoids errors and failures due to wrong configurations.

Advantages

- › Dimensions of the machine and testing space adaptable to customer-specific requirements: height, width and depth scalable .
- › Additional load cells, multiple grips and specific testing fixtures for each type of test.
- › One or two testing spaces.
- › Secondary testing frame for different measurement ranges (available under request).



Interface

Interface with embedded touch screen PC, modern, easier and with improved performance.

A real alternative to conventional table-top computers, combining a compact design with touch screen, with all the performances of conventional systems.

This "All in One PC" is fitted directly to the testing frame with an orientable support, reducing space requirements and offering to users an ergonomic working position for machine and software operation.



Operation of WinTest software through "All In One" touch PC

Testing frame

Thanks to the large test space available, it allows the use of large testing gripping heads, bending devices and temperature-controlled climatic chambers.

- › Very **high structural rigidity** over-sized testing frame with large and comfortable testing space.
- › Manufactured according to **main international standards**: UNE-7-474-92, DIN-51221, DIN-51223, DIN-51227, DIN-51228, BS-1610, EN-10002-2, ISO 7500-1 and ASTM E-4.
- › The **upper crosshead** is driven by 2 high precision ball screw drivers with scrappers and guided by two or four columns. The load cell for measuring the applied force is mounted below the crosshead.
- › The **lower crosshead** has a clamping flange for mounting the lower tensile gripping head or other testing devices.
- › Adapted testing frame for calibration and correction of machine axiality, through **advanced alignment system AlignTest**, allowing to meet with most demanding standard of automotive, aerospace and defence industry such as NADCAP.
- › Testing frame covered with **metallic panels** for the protection of internal devices. High quality metallic panels with epoxy coating.
- › The lower frame houses the **servomotor**, regulator and the mechanical drive system for the ballscrews drivers.
- › Base with **auto leveling system** with ball and socket joints. No foundation required. The machine can be placed on the laboratory floor, only needed a resistant horizontal surface.

Optionally, a second load cell can be mounted on the upper cross head. This provides the machine with a second testing area.



Load measurement

By means of a strain-gauge load cell, universal type (tension-compression). It has dual functionality, measuring applied force to the sample (kN) and send the return for the closed-loop control (MDi system).

- › **Robust design**: that endures lateral forces and eventual overloads
- › **High accuracy**: class 0,5, according to ISO 7500-1, from 1 to 100% of its nominal capacity (opcionally, from 0,5%). Meets also ASTM E-4 requirements.
- › **Top precision and repeatability**: up to 0,1%
- › **Additional load cells** can be installed, to increase load measuring capacity and/or for special applications.
- › **Self recognition system for load cells**. Allows control to get auto configured according to the capacity and calibration of the load cell mounted. Time effective and safety improving (avoids overloads).

Double function: to measure the force applied on the specimen (kN) and to provide feedback for the closed-loop control (MDi system) .



Standard configuration of Universal Testing Machine EUROTEST-200-MD2i

- Testing frame of 200 kN capacity.
- PC All-in-One with touch screen.
- Software WinTest
- Mechanical wedge gripping heads IB109 for tensile test.
- Clip-on axial extensometer IB-3542-050M-050 to determine the yield strength.

Displacement (position) measurement

By means of a resolver directly placed on the motor axis

- › **Displacement resolution**: 0,0021 μm
- › Wide **range of speeds** (0.001 to 500.00 mm/min). Other possible speeds on demand

The data obtained in the resolver is used for two applications: show test results and feedback to the close loop control (see MDi control system).

Mechanical transmission

Two **high precision ball screw drivers** plus two or four guiding columns (according to EUROTEST model), to assure an optimum load share and linear displacement of the mobile crosshead

Servomotor and reducer, along with its corresponding transmission pulley-belt, with precision teeth, directly fixed to the screw drivers.

Scrappers and belows for protecting columns and screwdrives from damages.

Machines with higher capacity than 200 kN, use two reducers (one per each screw driver), to increase mechanical gain and assure the needed torque.

Close loop control

Signals coming from different transducers (load cell, encoder/resolver, extensometer, etc) are compared with the command value, defined previously on the test parameter via software. The error of the comparison is sent to the brushless synchronous servomotor to be corrected, closing the control loop.

The frequency of this loop is **2,5 kHz** (2500 times per second) with **MD2i** modules and **10 kHz** (10000 times per second) with **MD5i** modules.

Safety

Machines are designed to cover and follow with fidelity all the requirements demanded by the standards and regulations related with CE marking.

Foundation

This series of machines doesn't requires special foundation: the testing frame includes leveling elements with ball and socket joint. It's only needed a resistant floor to allow the machine weight and the expected energy release.



Detail of the screw drivers system and guiding columns in EUROTEST-200 machine



Preparation of high temperature test on EUROTEST-600 machine with high temperature oven.



EUROTEST-300 testing machine with lateral close hydraulic grips and long travel extensometer until specimen fracture

Technical specifications for EUROTEST Series

FEATURES	EUROTEST 50	EUROTEST 100	EUROTEST 200	EUROTEST 300
Maximum load	50 kN	100 kN	200 kN	300 kN
Load measurement	Universal strain-gage load cell (tension-compression). Additional load cells can be installed			
Load cell Repeatability	Better or equal to $\pm 0.05\%$			
Measuring Range	1 % to 100 % of the load cell nominal capacity (autoescape, optionally from 0.5%).			
Class	0.5 according to ISO 7500-1 - Meets ASTM E-4			
Strength Resolution	24 bits			
Free distance between columns	500 mm ⁽¹⁾	500 mm ⁽¹⁾	500 mm ⁽¹⁾	650 mm ⁽¹⁾
Vertical free clearance, with load cell, without accessories	1350 mm ⁽¹⁾	1350 mm ⁽¹⁾	1350 mm ⁽¹⁾	1350 mm ⁽¹⁾
N° of guiding columns	2 Chromed plated and grounded with adjustable mechanical stops			
N° of screw drivers	2 high precision ball screw drivers with scrapers			
Mobile Crosshead	With end stroke by proximity detectors and automatic return to its prefixed initial position			
Motor drive	Synchronous servomotor (Brushless) with direct drive to screws by reducers. Enables displacement and load closed loop control (servocontrol)			
Displacement speed range (others under request)	0,001 - 500 mm/min ⁽²⁾	0,001 - 500 mm/min ⁽²⁾	0,001 - 500 mm/min ⁽²⁾	0,001 - 500 mm/min ⁽²⁾
Load speed (others under request)	Programmable between 0,1% and 10% of the maximum force, in kN/s ⁽²⁾			
Resolution position control	0,0024 μm	0,0024 μm	0,0024 μm	0,0024 μm
Displacement resolution	$\pm 0,1 \mu\text{m}$			
Transmission	By pulley-belt and double gearbox		By pulley-belt with precision teeth and gearbox	
Power supply	Three-phase 380 V plus neutral and earth, 50/60 Hz (to specify)			
Power consumption	1 kW	2 kW	3 kW	5 kW
Emergency stop	"Mushroom" type, placed on the testing frame			
Dimensions: Testing frame (mm)	1020 x 700 x 2450 (h)	1020 x 700 x 2450 (h)	1020 x 700 x 2450 (h)	1220 x 700 x 2525 (h)
Approx Weight (without gripping heads)	875 kg	875 kg	1100 kg	1460 kg
Dimensions / working table weight	1200 x 800 x 900 mm (width x depth x height)/ 40 kg aprox.			

⁽¹⁾ Adjustable. Other dimensions on request.

⁽²⁾ Programmable. Other speeds on request.

IBERTEST reserves the right to modify the specifications described without prior notice.

Technical specifications for EUROTEST Series

FEATURES	EUROTEST 400	EUROTEST 500 EUROTEST 600	EUROTEST 1200	EUROTEST 2000
Maximum load	400 kN	500 kN - 600 kN	1200 kN	2000 kN
Load measurement	Universal strain-gage load cell (tension-compression). Possibility of mounting other load cells of lower capacity than the nominal capacity of the machine.			
Load cell Repeatability	Better or equal to $\pm 0.05\%$.			
Measuring Range	1 % to 100 % of the load cell nominal capacity (autoescape, optionally from 0.5%).			
Class	0.5 according to ISO 7500 - Meets ASTM E-4.			
Strength Resolution	24 bits			
Free distance between columns	650 mm ⁽¹⁾	720 mm ⁽¹⁾	850 mm ⁽¹⁾	1200 mm ⁽¹⁾
Vertical free clearance, with load cell, without accessories	0 - 1350 mm ⁽¹⁾	0 - 1400 mm ⁽¹⁾	0 - 1550 mm ⁽¹⁾	0 - 1750 mm ⁽¹⁾
N° of guiding columns	4 Chromed plated and grounded with adjustable mechanical stops.			
N° of screw drivers	2 high precision ball screw drivers with scrapers.			
Mobile Crosshead	With end stroke by proximity detectors and automatic return to its prefixed initial position			
Motor drive	Synchronous servomotor (Brushless) with direct drive to screws by reducers. Enables displacement and load closed loop control (servocontrol)			
Displacement speed range (others under request)	0,001 - 500 mm/min ⁽²⁾		0,001 - 400 mm/min ⁽²⁾	
Load speed (others under request)	Programmable between 0,1% and 10% of the maximum force, in kN/s ⁽²⁾			
Resolution position control	0,0024 μm		0,0027 μm	
Displacement resolution	$\pm 0,1 \mu\text{m}$			
Transmission	By pulley-belt with precision teeth and double gearbox.			
Power supply	Three-phase 380 V plus neutral and earth, 50/60 Hz (to specify)			
Power consumption	6 kW	6 kW	12 kW	18 kW
Emergency stop	"Mushroom type", placed on the testing frame			
Testing frame dimensions (mm)	1220 x 700 x 2525 mm	1550 x 700 x 2650 mm	1200 x 1300 x 3375 mm	1950 x 1300 x 3975 mm
Approx Weight (without gripping heads)	3200 kg	3200 Kg	6850 Kg	9800 Kg
Dimensions / working table weight	1200 x 800 x 900 mm (width x depth x height)/ 40 kg aprox.			

⁽¹⁾ Adjustable. Other dimensions on request.

⁽²⁾ Programmable. Other speeds on request.

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Examples of EUROTEST special versions

The machines of the EUROTEST series are a versatile testing solution. The testing frame (width, height, stiffness, etc.) as well as the other features of the machine can be adapted to the user's needs.



EUROTEST 50 E machine, with extra wide column spacing, removable tensile gripping heads and 3 metre long bending beam.



EUROTEST 100 machine equipped with wood testing devices.



EUROTEST 150 machine equipped with slotted table for lower head removal and mounting of other test elements.



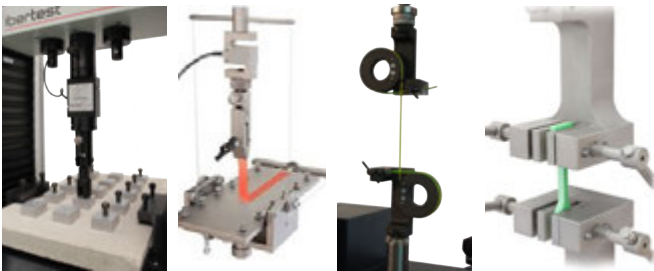
EUROTEST 200 machine with hydraulic side-closing grips and thermal chamber for temperature-controlled tests.

Examples of test possibilities with the EUROTTEST series

The EUROTTEST series machines, by means of the appropriate testing device, allows to perform any type of test on a wide range of materials with F_{max} up to 2000 kN. Such as:

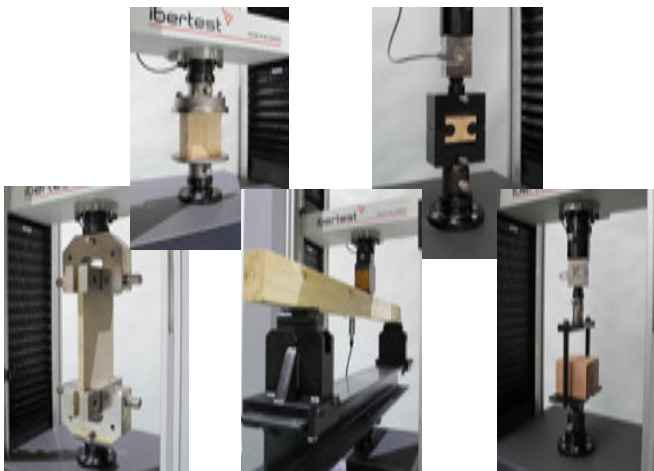
Polymers and adhesives

Standards: ASTM-D395, ASTM-D412, ASTM D429, ASTM-B571, ASTM-D1894, ASTM-D2861, ASTM-D2979, ASTM-D3330, ASTM-D4776, ASTM-D6252, ASTM-D6862, ISO813, ISO4074, ISO5893, ISO8295, ISO19671, DIN EN1939, GOST411, BS3704, EN28510, ISO 8510-1, etc.



Woods and conglomerates

Standards: ASTM-D143, ASTM C297, ASTM-D905, ASTM D1037, ASTM D1623B, DIN 52187, DIN 52365, DIN 52367 EN 319, EN 1607, EN 12004, EN 392, ISO 6238, DIN EN 311, etc.



Construction and ceramic materials

Standards: ASTM C109, ASTM-B406, ASTM-C1452, ASTM-C1230, ASTM-C1550, ASTM-C1609, ASTM-C1812, EN 196-1, DIN488-5, DIN EN ISO15630-2, DIN EN10080, ISO3327, etc.



Textiles and geotextiles

Standards: EN ISO13936-1, ISO13936-2, EN14704, ISO 17697, ISO20932-2, ASTM-D1037, ASTM-D1683, ASTM-D6364, ASTM-D5034, ASTM D6241-B, GOST56335, DIN EN ISO12236, DIN EN ISO9836-1, etc.



Composites

Standards: ASTM D695, ASTM-B571, ASTM-D2344, ASTM-D2861, ASTM-D3330, ASTM D3410, ASTM D3846, ASTM-D5379, ASTM-D5528, ASTM-D6252, ASTM-D6484, ASTM D6641, ASTM-D6862, ASTM-D4255, ASTM-D7078, ISO 8510-1, DIN EN1939, GOST26246.0-89, EN ISO14125, EN ISO14126, EN28510, ISO8515, etc.



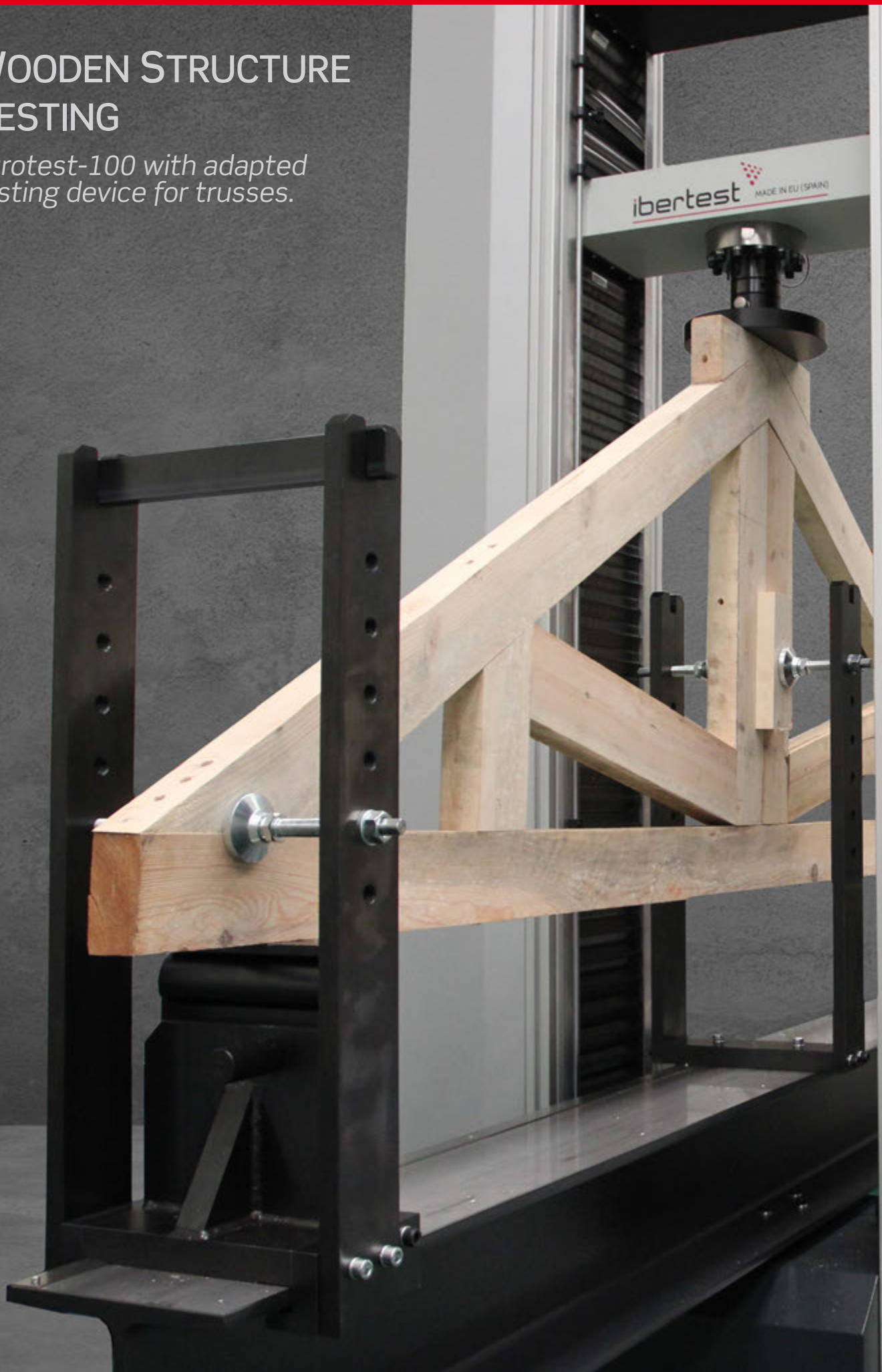
Metals

Standards: ASTM-E8, ASTM-A185, ASTM-A262, ASTM-A370, ASTM-A497, ASTM-C749, ASTM-A974, ASTM-C1452, ISO3651-2, EN ISO 898, DIN488-5, DIN EN ISO15630-2, EN10080, GOST 10922, etc.



WOODEN STRUCTURE TESTING

Eurotest-100 with adapted testing device for trusses.



ELECTRONIC DIGITAL MODULES

CONTROL SYSTEMS

MDi CONTROL UNITS . MODULAR SYSTEM

Electronic controller units MDi are specially designed for data acquisition and close loop control of testing instruments.

Measuring transducers are plugged to the MDi module and the measurement is exported to the computer via USB or Ethernet.

The IBERTEST software WinTest makes data collection and shows real-time for drawing graphs and test results calculation.

This new system, based in external modules, substitutes the old electronic cards mounted into the computer, improving the performance, reliability and data acquisition speed.

Due to the external module configuration, the computer can be fast and easily changed by any other suitable PC or laptop, without need to make adjustments or calibrations.

This is very useful in case of eventual breakdown of the computer, or when obsolete computer needs to be changed.

MD2 MODULAR CONTROL UNIT, FOR STATIC TESTS

MD2i unit has been designed for **static** machines. The MD2i can be used either in electromechanical or servohydraulic machines.

The MD2i unit has the following input channels:

- Force channel (Load). For the connection of a load cell or pressure transducer. This channel has a resolution of 24 bits.
- Incremental position channel (X-Head). For the connection of an encoder (digital pulse encoder), resolver (encoder emulator), or linear transducers (wire, SSI type, etc.).
- 4 expansion slots for data acquisition cards, allowing the connection of other transducers, e.g. strain gauges, LVDTs, linear transducers, etc.

The module has an analogue $\pm 10V$ (16 bit) analogue output channel for the control signal of a servo valve in the case of servo-hydraulic machines or a servo motor (electromechanical machines).

The MD2i control module is equipped with a high-quality, dust-tight electrical safety box, which ensures the perfect condition of the internal electronic components.

This box allows the MD2i module to be compactly integrated into the machine frame itself (TESTCOM model) or inside the machine's electrical panel (EUROTEST, IBMT4, UMIB, IBMU4 machines).



MD2i module, in a safety box, to be integrated into the frame or the or in the electrical panel of the testing machine.



MD2i module, rear view



MD2i module, side view



Tarjeta de adquisición de datos para la conexión a las ranuras de expansión de los módulos MDi



S-type load cell, universal type (tension/compression) of 500 N and its connector with built-in EEPROM memory.

The transducers comprises connector-plugs with built-chip EEPROM memory.

The transducer calibration data (unit of measure, range, zero position, linearization, etc.) are stored in the EEPROM memory. Thus, the transducer is automatically recognized as input channel when plugged to the MDi control unit.

Electronic digital modules MDi

PID CONTROL

The MDi module uses PID (proportional-integral-derivative) for control loop feedback of the application of force to the test specimen.

The PID controller calculates an error value as the difference between the measured process variable (force, position or strain) and the desired setpoint.

The three signals coming from the PID are combined to generate a new command signal, which is sent to the servovalve or servomotor to eliminate the deviation as fast as possible and assuring the stability of the process.

The process of detection, evaluation and new signal generation is repeated again and again. The time consumed is the **closed loop control** time and the lower the time, the faster the controller.

3 CONTROL OPTIONS

MD electronics allows to close the control loop with the applied load (control in kN/s)⁽¹⁾ or with the position (control in mm/s)⁽¹⁾ or with the material deformation (control in mm/s)⁽¹⁾:

1. Load control

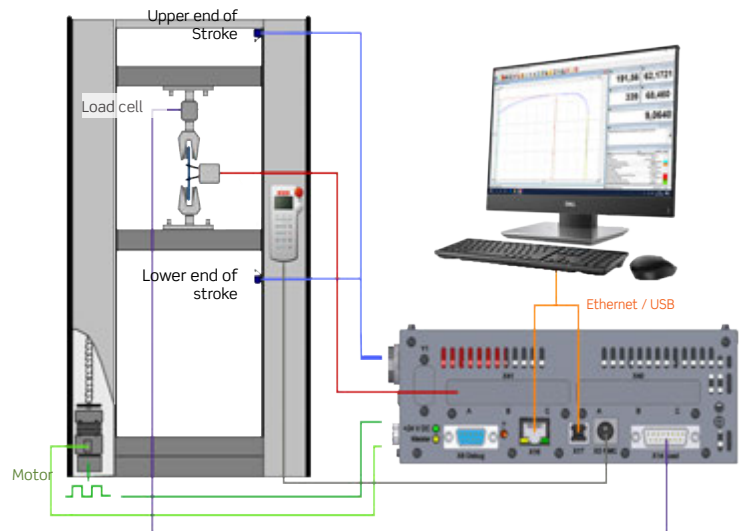
The MDi module receives the signal from the load cell and compares this feedback value with the command value (N/s)⁽¹⁾.

2. Position control

The MDi module receives the signal from machine's position transducer (encoder, resolver, LVDT, etc.) and compares this feedback value with the command value (mm/min)⁽¹⁾.

3. Strain control

The MDi module receives the signal from machine's deformation transducer (extensometer) and compares this feedback value with the command value (mm/s or mm/min)⁽¹⁾.



Scheme of load control for electromechanical testing machines



Built-in MD2i module in a Testcom machine

APPLICATIONS OF EACH TYPE OF CONTROL

Load control is normally used on low load resistance tests materials which undergo deformation just before fracture, such as concrete, cement, ceramics, rocks, adhesives, etc. As well as in metals test on material elastic zone.

Position control is used in materials with high deformation, as rubers, elastomers, etc as well as on metals after elastic range.

Strain control is used in fracture tests and for research applications.

AUTOMATIC AND PROGRAMMABLE CONTROL CHANGE.

The IBERTEST WinTest testing software allows to define several criteria for changing control automatically (defined variation in the slope of the graphic, certain value of strength, load, position or deformation).





This feature is used in several applications as in metals testing, to allow the control change among behaviour regions of the material (change from elastic to plastic behaviour).



Remote control unit UCRD-6 (Optional)

⁽¹⁾ Other units of measurement included in the WinTest software.

Specifications of MD2i and MD22i modules, for static and dynamic tests

MODULE	MD2i	MD22i
Front View		
Rear View		
Application purposes	Static tests	
Microprocessor	CPU 800 MHz	
Channels	Up to 14	
Resolution	24 bit	
Max sampling frequency	2,5 kHz 2500 reading per sec per channel	
Sincronization	All channels fully synchronous and simultaneous	
Closing loop time	0,4 milisecond (2500 times per second)	
Drive interface	±10V-Command-Output (generated with ±15 Bit resolution) I/O's and relays for safety functions	
Expansion possibilities	Up to 8 modules can be connected. 32 total synchronous channels	
PC communication	USB 2.0 full speed and/or Ethernet 10 / 100 Mbit	
Digital Inputs (24 V)	8	
Digital outputs (24 V)	8	
Serial sensor interface	COM1 (internal)	
Debug interface	COM2: 115 kB	
Slot for safety shield	YES	
Power supply	DC 24 V	
Remote control option	YES	Integrated in the module

HAND-HELD REMOTE UNITS UCRD-6i and UCRV

Features

1. Operation via function keys and digital control pad "digi-Poti".
2. OLED graphics display 128 x 64 dots.
3. Dimensions: 25 x 65 x 202 mm.
4. UP/DOWN/STOP keys and programmable keys (machine control) for a total of 15 function keys to control the piston or middle crosshead. More precise movements are possible with the "digi-poti" potentiometric control.
5. Selection of operation mode: via remote control unit or via software.
6. The UCRD-6i has a magnetic back and therefore can be placed at an ergonomic position.



UCRD-6i controller

Advanced features

The UCRD-6i unit can perform several simple predefined tests without need of a computer or additional software:

- › General tension/compression
- › Pressure
- › Bending cycles
- › Bending
- › Creep test (creep) (*)
- › Indirect tensile test (Brazilian)

(*)Optional, on request.

NEW UCRV: Remote controller with virtual version.

Wired remote control for cross-head movements. Independent opening and closing of hydraulic(*) gripping heads and piston movement. (*) Options for machines that have this feature.

The ergonomic shape allows a comfortable and safe grip that facilitates its use in the operation of the machine in a more precise and user-friendly way.

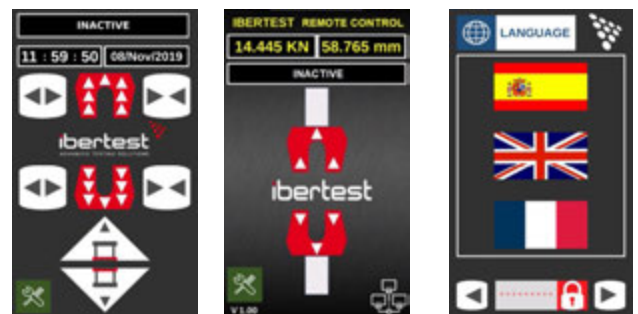


In addition to the wired controller, there is an optional virtual version, installable on a mobile phone or tablet (Android or IOS) for wireless operation via the integrated WIFI network (terminal not included).



The virtual version, besides the basic functions of the cable version, includes the following:

- › Real-time display of force and stroke data.
- › Start and stop the test.



Examples of menu screens of the virtual version of the UCRV

WINTEST SOFTWARE

FOR MATERIALS TESTING

Introduction

Software pack, running under Windows™, specially developed by IBERTEST to be used in universal testing machines.

Thanks to its flexibility and power, you can easily customize software WinTest, to every need.

Indeed, the system allows user to configure tests according to the major international standards for engineering materials (UNE, ASTM, ISO, ... etc). However, for a small supplement, IBERTEST can adapt WinTest software to special needs or for your laboratory.

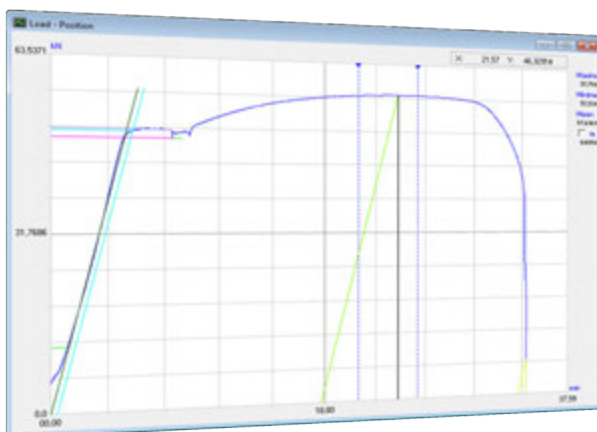
During design phase of WinTest software, IBERTEST paid special attention to the ease of use, so the program can be handled even by users with little experience in computers.

The WinTest control screen provides toolbar and intuitive menu for quickly identify available actions, to select and configure test parameters without consulting the manual.



The software shows the user available options and its possible settings at each time, guiding user step by step interactively through test configuration.

Thus, WinTest helps user to optimize processes when using materials testing machine, getting the best performance both in the execution of the test and in the results analysis.



Initial control screen



Screen of test results



Using WinTest on a Touch Screen "All in One" PC

WINTEST SOFTWARE PROVIDES COMPLETE CONTROL BEFORE, DURING AND AFTER THE EXECUTION OF THE TEST.

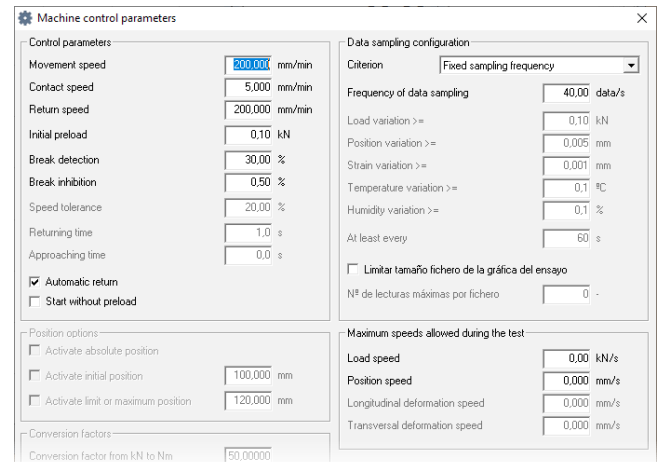
1. PRE-TEST CONFIGURATION

To configure tests at your convenience, the software offers many options, such as:

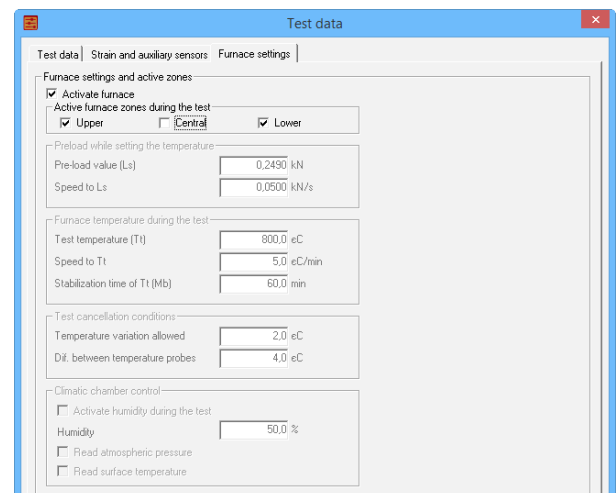
- › *Setting-up of the machine:* Establishment of safety limits, speed of movements, preload, automatic return, etc.
- › *Users management,* with custom options for each user. Provides system security and prevents unauthorized use.
- › *Type of test to perform:* Tensile, compression, bending, cycles, etc. The settings change automatically according to the chosen type of test.
- › *Working method:* *preconfigured* by IBERTEST (according to a Standard Test) or *free configuration* according to the criteria of the user (always within the physical and mechanical limitations of the machine, testing devices and sensors).
- › *Individual or serial testing.* Serial tests are well suited for example, repetitive tests with machines intended for Production Quality Control.
- › Select the type of automatic control in *stroke, load or strain* (with appropriate optional transducers)
- › Activation of *additional sensors* placed on the machine or in the specimen, such as strain gauges, temperature sensors, etc. ¹
- › Select the type of *diagram* (load-time, load-stroke, load-strain, etc.) for the *graphical representation* of the test.
- › *Results to display* on screen (in real time) or in the report (after the validation of the test).
- › Automatic execution of calculations derived from the test results (strength, elastic modules, etc.) by means of a software integrated *programmable calculator*.
- › Design of *test reports*, fully customizable. Test reporting is essential for laboratories subjected to Good Laboratory Practices (GLP), or Quality Assurance Systems, as per ISO-EN 17025.

And many more options.

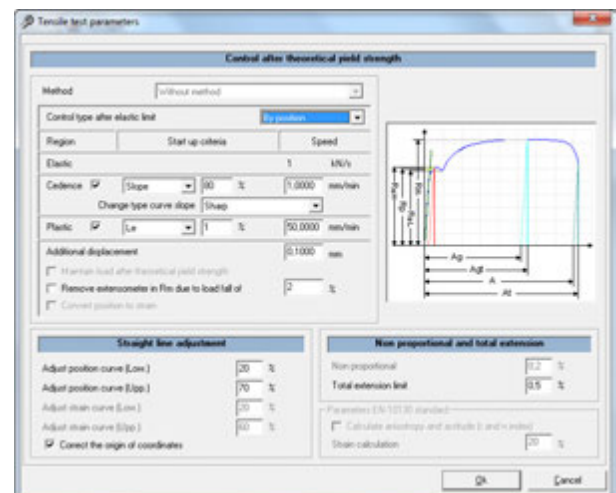
(1): For sensors previously installed into the system.



Testing machine setting-up



Configuration of Tests



Auxiliary window "traction parameters" Available when selecting a tensile test.

2. SPECIMENS IDENTIFICATION

By means of window: "Specimen Parameters", user has multiple options to label specimens.

- › Name of test / specimen / sample, origin, batch, client, auto-numbering, date, etc.
- › Test material, geometry of the specimen (length, width, diameter), mass, density, etc..
- › Free text. For adding any important info not reflected above.

3. TEST DEVELOPMENT

The program performs tests automatically, according to the method and parameters previously introduced in the test configuration.

For test monitoring, PC screen shows, in real time, following features:

- › Graphical representation: XY charts of load-stroke, load-strain, stroke-strain, etc.
- › Instant numerical values, obtained by the sensors connected to the system (position, load, strain, etc).
- › Real-time execution and presentation, of the results of the calculations pre-programmed by the user with the integrated programmable calculator.

If something goes wrong, the user can stop the test at any time during its execution.

4. TEST RESULTS: ANALYSIS AND MANAGEMENT

Once test is completed, results and the graphical representation are shown in the screen. If user rejects the test, results won't be stored. Before validating the test, you can perform following actions:

- › Select and expand areas of the graph (zoom).
- › Change the type of XY chart.
- › Location and search for singular points of the chart.

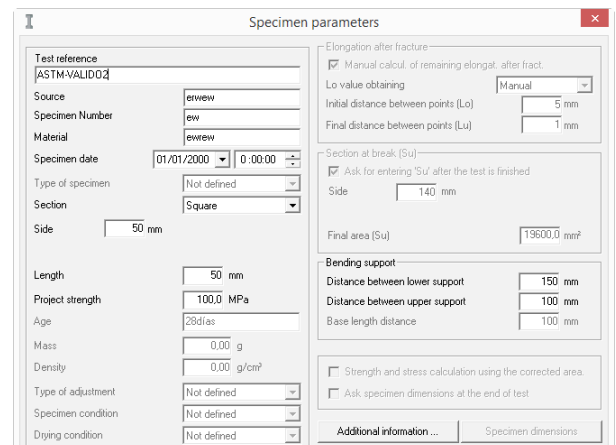
The statistical program allows you to compare several tests including consecutive superimpose curves, create 2D and 3D bar and lines diagrams, create bmp images, etc.

The output files can be converted to XML, ASCII or CSV formats to be exported to other systems such as Excel, LIMS, etc.

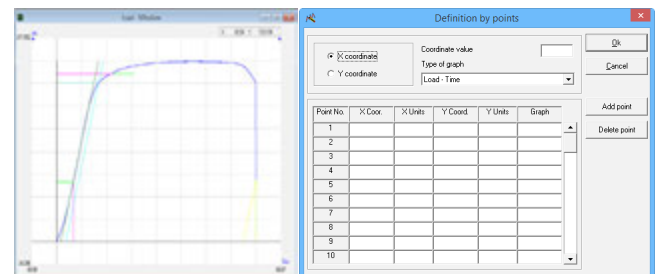
TEST SIMULATION MODULE

Additional module that allows to recover machine parameters (real tests) and reuse on other computers. Being able to simulate once again the test as if performed in real time, without the need for connection to the machine. Main characteristics:

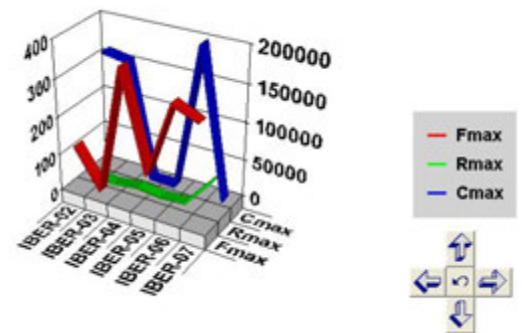
- › Test recovery from network or local
- › Real test simulation
- › Graph visualization on real time
- › Calculation of test parameters
- › Generación de informes



Setting parameters for the test specimen



Location of significant points on the graph of the test



Test comparison - 3D representation



Example of a test report

Main Features

Operating system	WinTest works with all Microsoft™ Windows® (32 and 64 bits) operating systems and shares common features with other Windows® programs (system of menus, toolbars, file management, sizing of windows, colors, etc..)
Help functions (usability).	<p>The icon toolbar can be displayed as reduced version, including only the more common features and larger icons.</p> <p>The program is compatible with touch screen computers.</p> <p>The F1 key activates the help window. Help support includes a complete user manual for each application.</p>
Type of tests	Tensile, compression, flexure (one or two load points), bending, extrusion, penetration, shear, etc., on metallic and nonmetallic materials.
Test models	<p>WinTest comprises test models according to most commonly used standards (EN, ASTM, ISO, etc.). The user can configurate similar test models.</p> <p>Under request, we can make modifications to configure your WinTest software to your special needs (consult additional cost)</p>
Cyclical testing	<p>WinTest allows to create cyclic tests, with rising, keeping or falling of the load applied to the specimen. The change of slope or ramp can be done in response to load, stroke or both figures inclusive.</p> <p>When necessary, the slope changes may be accompanied by the control mode (load or stroke) changes.</p>
Serial testing	<p>Possibility of grouping several tests together, in series and subseries.</p> <p>It is possible to obtain statistical information of the grouped tests parameters.</p>
Multi-frame control	Management of up to six testing zones, in alternately way, using the same PC and the same software. The software shows the available test zones to selecting.
Measurement channels	<p>Simultaneous representation of several measurement channels at once.</p> <p>WinTest can manage up to 16 channels (both deformation or auxiliars). The channels can be configured by the user. To use all features offered by WinTest, you may need additional hardware.</p>
Calculator programming	<p>The system integrates a programmable formula calculator.</p> <p>In this way, you can combine parameters of the specimen with results or values obtained during the test, in order to obtain derivatives results (modules, strength, unit conversion, etc.) in real time.</p>
File management	Test results automatically recorded on hard disk, and the configuration of the machine at the time of their execution. These tests can be recovered for further analysis.
Data exportation	The output files can be exported in XML, ASCII or CSV and Excel format (csv or xls), allowing these files to be imported for most of the programs, word processors and spreadsheets on the market.
Statistics	<p>Incorporates the possibility of performing statistical analysis on tests previously recorded on hard disk.</p> <p>The statistics can be displayed as graphs, histograms, level with Gaussian distribution, charts, dimensional comparison (both tapes and volumes), test curves comparison by superimposing them on a diagram of coordinates, etc.</p>

"TECHNICAL SUPPORT HAS NEVER BEEN EASIER"

TELEDIAGNOSIS is a remote diagnostic service and maintenance support, available for all IBERTEST equipment and testing machines equipped with data acquisition system by computer.

The immediate attention of TELEDIAGNOSIS service for customers located worldwide, minimizes downtimes and avoids delays in the work of laboratory, while reducing or eliminating the overhead of moving the IBERTEST technicians.

To run TELEDIAGNOSIS a link program is used which establishes a remote connection to control the computer of the machine, quick and safe, ensuring IBERTEST services even at facilities with distant locations. (Minimum connexion velocity required : 5MB/s)

Thereby, an easy and effective intervention from our Technical Service is possible regardless of the location of the machine, as long as an access to INTERNET is available.

Even on those occasions when the Technical Service must act "in situ", the TELEDIAGNOSIS is helpful to clearly identify the problem in advance and improve first-visit resolution rates.

During a TELEDIAGNOSIS session, the following actions can be performed:

› **Software revision and correction.** IBERTEST technicians can inspect the software file system, looking for wrong configurations, lost files and directories, corrupted files, viruses or others. Once the errors are detected, only the appropriate libraries and changes are transferred, without reinstalling complete programs.

› **Remote handling.** IBERTEST technicians can operate the remote machine in real time to perform maneuvers, tests of mechanical movement, installation of testing transducers and accessories, verification of electrical and electronic systems, on/off alarm and security systems, etc.

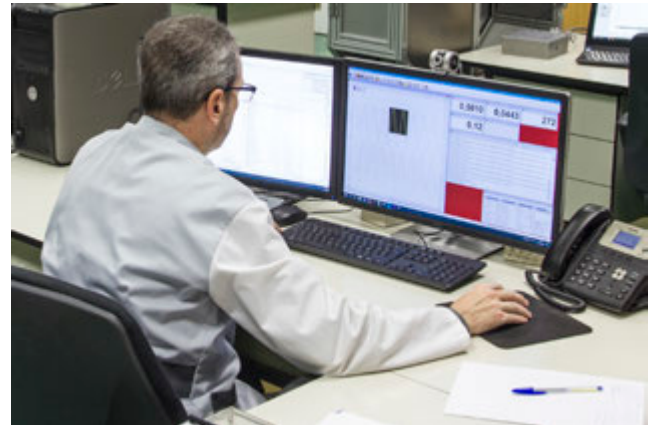
› **Videoconference.** Through webcam a videoconference between client and our technicians can be maintained, thus we can get visual-information about the correct operation of the machine's mechanical and hydraulic systems. Also, by written or voice messages, it is possible to exchange views and comments, and give appropriate instructions to the user, when necessary, to perform some physical action in the machine.

› **Updates.** The software can be easily updated to its latest version, which allows enjoying the advantages resulting from the continuing work of review and program development.

› **Factory reset.** All machines have a backup, stored in our servers in Madrid, which allows you to restore the original configurations when necessary.

TELEDIAGNOSIS

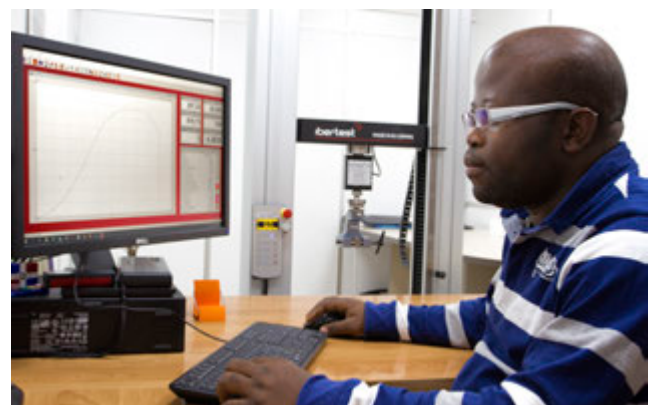
REMOTE DIAGNOSIS SERVICE



IBERTEST Spain - Madrid Technical Services



Real time TELEDIAGNOSIS link



End-user laboratory (anywhere in the world)

Remote diagnostic service by TELEDIAGNOSIS is free during the first year and during the warranty period.

After the guarantee period, many of our customers require the Annual Telediagnosis Pass, which covers interventions for preset periods of time (number of connection hours).

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