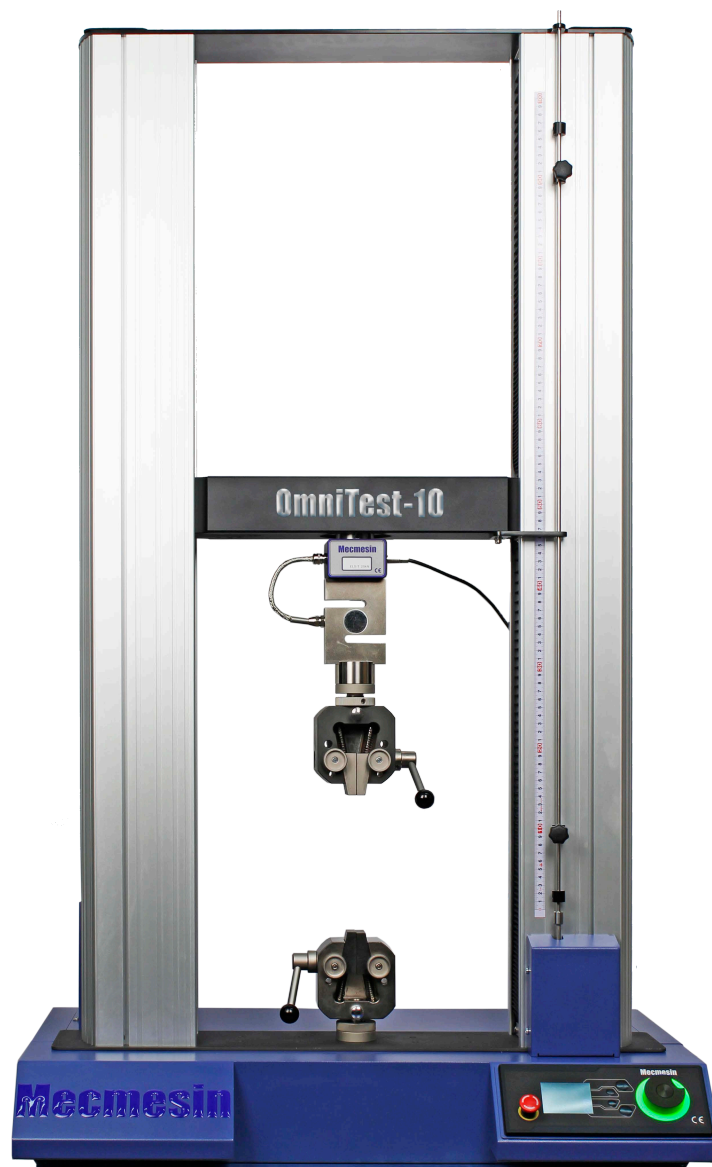




OmniTest™ Twin Column Operation and Installation Manual



The Scope of this Document

This reference manual covers the operation of an OmniTest Twin Column force test stand, intended for use with Mecmesin enhanced load sensors, extensometer devices and other Mecmesin accessories. Operation of additional accessories is covered in separate documentation.

The following manuals may aid you in the use of your test stand:

- Guide to Safe Use of Mains Powered Test stands (part no. 431-398),
- VectorPro™ for OmniTest and dVu Test Stands (part no. 431-955),
- Long Travel Extensometer Installation Guide (part no. 431-957),

Important

It is essential that you familiarise yourself with the contents of this *Manual* and the separate *Guide to Safe Use of Mains Powered Test stands* (part no. 431-398) before attempting to operate your OmniTest Twin Column Test stand.

2018 © Mecmesin Ltd, supplied with Mecmesin test stands and not for redistribution

Part no. 431-965-01

Contents

1.	Items Supplied with your Test Stand	4
	Accessories	4
2.	OmniTest™ Twin Column System Diagram	5
3.	Initial Setup	6
3.1	Unpacking the Stand	6
3.2	Lifting the Test Stand	6
3.3	Environment Conditions	6
3.4	Mains Power Supply	7
3.5	ELS: Enhanced Load Sensor	8
3.6	Fitting an ELS to your Test stand	9
	Connecting an ELS to the OmniTest Twin Column	10
3.7	Connecting the OmniTest Twin Column to a PC	10
	Cable Management	10
3.8	Attaching Grips and Fixtures	11
3.9	Setting the Limit Stops	12
3.10	Test Stand States	12
4.	Front Panel Controls	13
	Emergency Stop Button	13
	Multi-function Scroll Wheel Control	13
	OmniTest Display Panel	15
	On-Screen Icons	15
5.	Automatic ELS Firmware Update	18
	Step 1 - Connect Your ELS Device	18
	Step 2 - Starting the Upgrade	18
	Step 3 - Flashing the Device	19
6.	OmniTest™ Twin Column Settings	20
	Settings: Jog settings	20
	Settings: PIN Code	20
	Settings: Pre-load Threshold	20
	Settings: Information	20
7.	Connectors Panel	21
8.	OmniTest™ Twin Column Specification	22
9.	OmniTest™ Twin Column Dimensions	23
10.	Operator Notes	25

1. Items Supplied with your Test Stand

When ordering your OmniTest Twin Column test stand you will be supplied with the following parts:

- OmniTest Twin Column test stand,
- Mains cable,
- Document: A Guide to Safe Use of Mecmesin Mains Powered Test stands,
- Document: OmniTest Twin Column Operation and Install Manual,

Note: Accompanying VectorPro™ software may be supplied either via a physical flash drive or software download link

Accessories

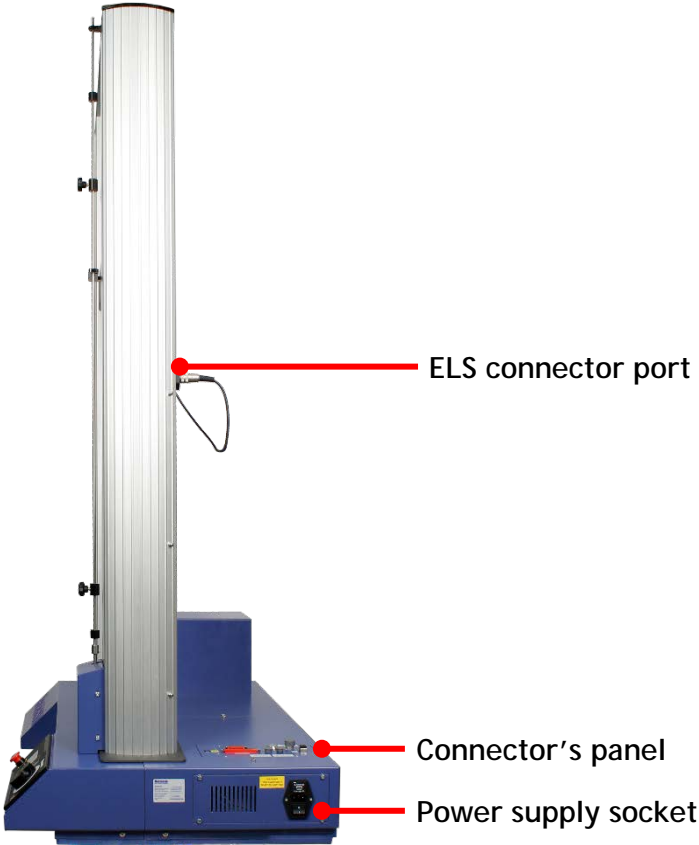
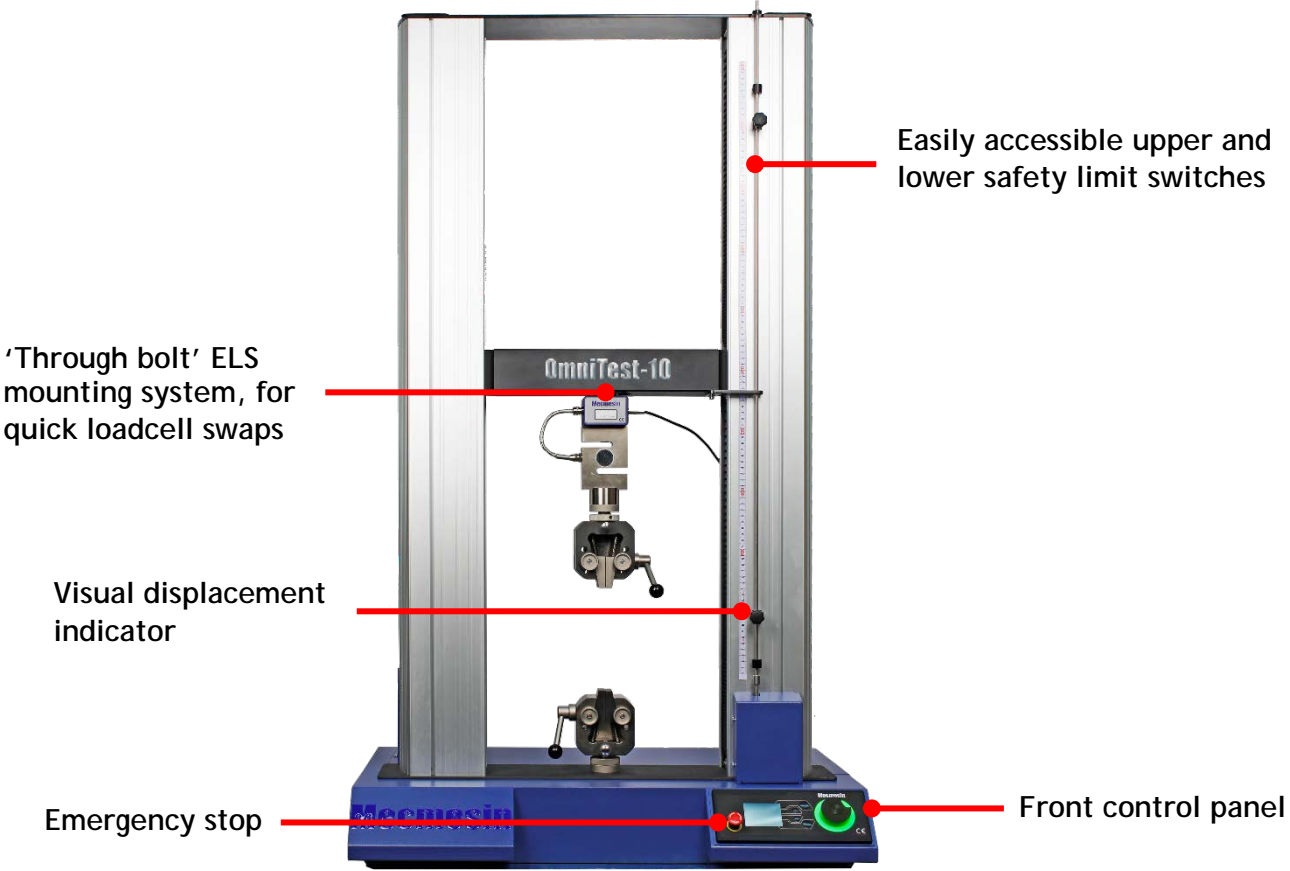
For a full range of enhanced load sensors (ELS), extensometers and accessories, please go to the Mecmesin website www.mecmesin.com, or your local distributor, as listed on the back cover of this document.

- For connection of the stand to your computer system a Mecmesin supplied 2m USB B to USB A cable communications cable is required (part no. 351-093).



▲ Here you can see some of the grips and fixtures that are available.

2. OmniTest™ Twin Column System Diagram



3. Initial Setup

3.1 Unpacking the Stand

When you first receive the stand please check that there is no obvious damage to the packaging. If there is any sign that the packaging or the test stand itself has been damaged, please contact Mecmesin or your authorised distributor immediately. Do not use the stand until you have done so.

We strongly recommend that the packaging is retained, as this can be useful if the machine needs to be returned for calibration or shipped between sites.

Section 1 lists items that should be included with your test stand. Please contact Mecmesin or your authorised distributor if any items are missing or damaged.

3.2 Lifting the Test Stand

The unpackaged weight of the test stand is given in the specification table at the back of this manual. Suitable lifting equipment must be used in conjunction with the test stands lifting points.

3.3 Environment Conditions

In line with BS EN 61010-1 it is recommended that your Mecmesin OmniTest Twin Column test stand is operated in an environment that matches the following conditions:

- Indoor use only, recommended to be operated in a lab environment.
- Altitude up to 2 000 m;
- Temperature range between 10 °C to 40 °C. Please note that the instrument should not be used for long durations at higher temperatures.
- The maximum relative humidity is 80 % for temperatures up to 31 °C decreasing linearly to 50 % at 40 °C. It is crucial that the surrounding environment does not cause water to form on the device.
- Mains supply voltage fluctuations up to a maximum of ± 10 % of the nominal voltage.
- The environments should also take considerations of excessive dust or metal particulates as ingress of these into the device can cause damage to the system.

3.4 Mains Power Supply

OmniTest Twin Column test stands can be used on 110–120 or 220–240 Vac 50-60 Hz supplies.

The rear fuse carrier will be set for your local requirement but is reversible, so should you replace a fuse, the correct local voltage must be selected.

The voltage that is selected is indicated by which arrow is pointing to the white line located at the bottom of the device. This is illustrated in the image below, shown within the red circle



▲ Removing the fuse holder

3.5 ELS: Enhanced Load Sensor

Enhanced load sensors or ELS for short, are smart devices used to capture load readings for OmniTest Twin Column test stands, all calibration information is held on the individual load cell meaning they can be swapped from system to system and the calibration will follow with no input required.

These load cells are available in a range of sizes and designs to best suit your requirements. See the specifications section of this document for details relating to capture rate and accuracy.



▲ A selection of enhanced load sensors (Not all ELS devices shown are compatible with twin column test stands)

3.6 Fitting an ELS to your Test stand

The OmniTest Twin Column uses an M18 bolt that passes through the crosshead and screws into the top of the load cell.

To fit your ELS to your test stand pass the M18 bolt through the crosshead align the ELS below, use a 14mm Allen key to secure the ELS in place. For large load cells, it may be necessary for one person to hold the ELS while the other secures the bolt.



▲ OmniTest Twin Column Dovetail, note the grub screw circled in red

Note: It is also important to ensure that attached grips and fixtures do not overload the ELS. If in doubt please check the weight of any addition grips and fixtures prior to fitting these.

Connecting an ELS to the OmniTest Twin Column

To connect your ELS to your OmniTest stand simply plug the Mecmesin ELS to OmniTest cable (part number 352-275-V01) into both the load cell and the ELS shroud located on the back of the stand.



▲ Connecting the ELS to the test stand.

As enhanced load sensors are 'smart' devices all calibration and capacity information is passed to the stand automatically as the sensor is connected.

3.7 Connecting the OmniTest Twin Column to a PC

To connect your OmniTest Twin Column test stand to VectorPro™ software, connect the USB B port to a PC using cable part no. 351-093.

Important! Please install VectorPro™ software on your desired PC before connecting the test stand to your PC.

Cable Management

It is essential that no cables are permitted to interfere with the controls or any moving parts.

3.8 Attaching Grips and Fixtures

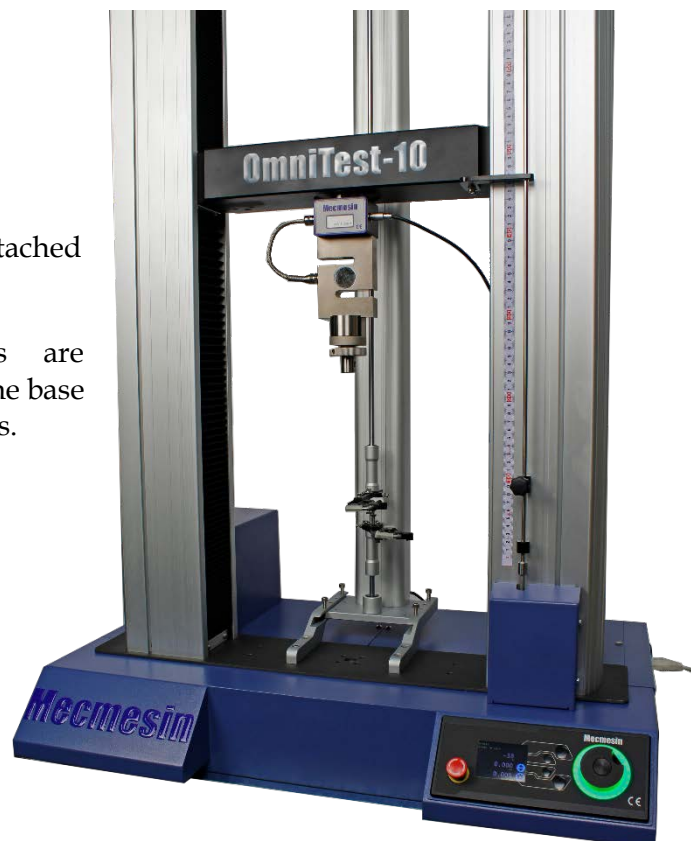
For flexible attachment of a variety of accessories, the OmniTest Twin Column features a base plate with numerous threaded holes spread symmetrically across its width as well as fixing points for a standard 20mm QC adapter.



▲ OmniTest Twin Column base plate

Upper grips and accessories are attached directly to the ELS device being used.

Mecmesin LTE-1100 extensometers are available and can be fitted directly to the base plate, using two supplied, adapter arms.



3.9 Setting the Limit Stops

Limit stops help prevent damage to load cells and fixtures by stopping the crosshead movement before the moving fixtures come into contact with static parts of the stand. Their positions are adjusted after the fitting of fixtures and test samples.

There are two manually-set limit stops, located for your convenience, on the front of the OmniTest Twin Column. These are set by loosening the thumb-screw, moving the stop to a new position and retightening. When the crosshead meets a stop, it activates a switch. This will stop the crosshead movement at an upper or lower limit.



▲ Limit stops on an OmniTest Twin Column

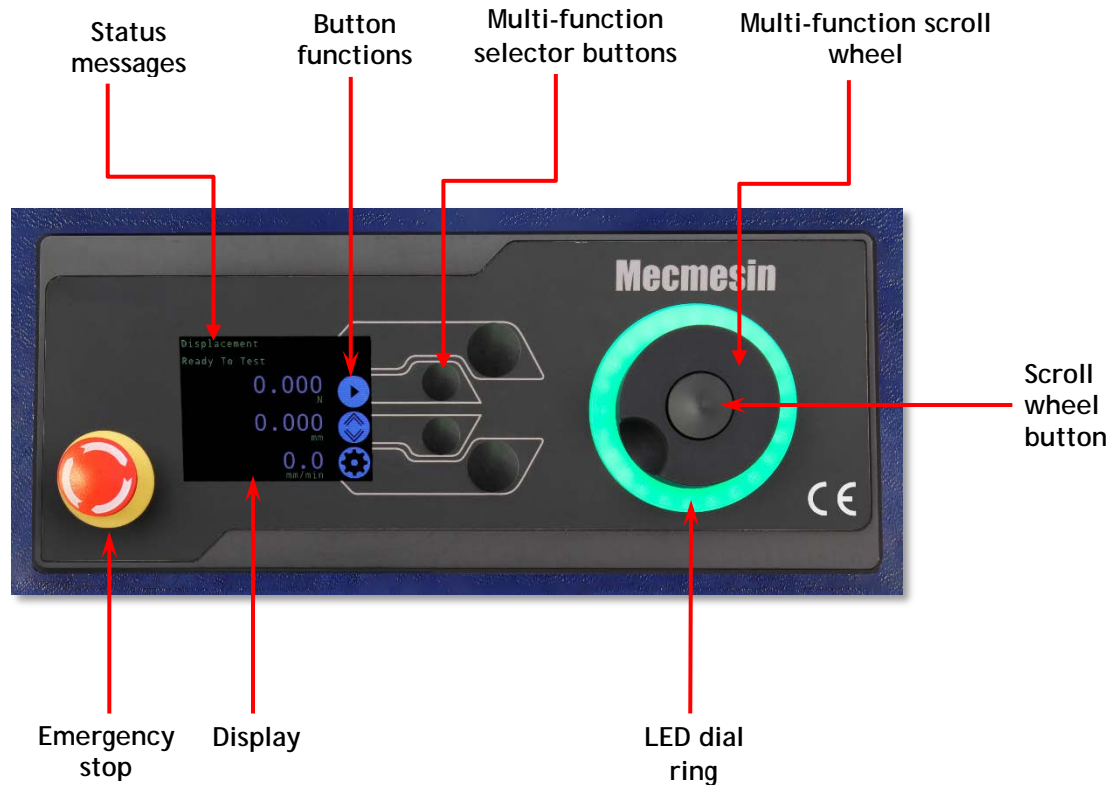
3.10 Test Stand States

The test stand can be in one of five states:

1. Test readiness - ready to start, or complete,
2. Testing - test operation sequence is running,
3. Stopped - test interrupted or emergency stop pressed,
4. Jog mode - for jogging or positioning the crosshead manually,
5. Settings menu - for adjusting your test stands settings,

In each state, the selector buttons have functions described by the on-screen icons.

4. Front Panel Controls



Emergency Stop Button



Push to immediately stop crosshead movement. Rotate the button to release it and resume crosshead control. If pressed during a test, do not simply restart a test, ensure you remove any residual force using the test stand's jog controls.

Multi-function Scroll Wheel Control

Scroll Wheel Colours

The LED light ring surrounding the scroll wheel shows three colours, indicating three states, these states are:



Green Light

Pulsating: Ready to start test
Rotating: Scrolling through a menu



Amber Light

Static: Test completed
Rotating: Crosshead

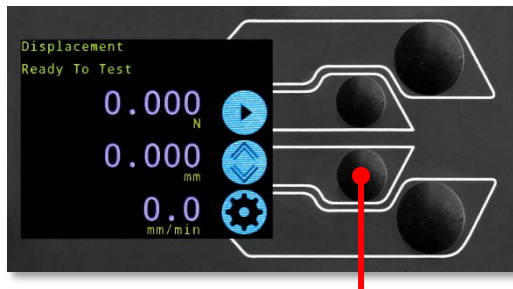


Red Light

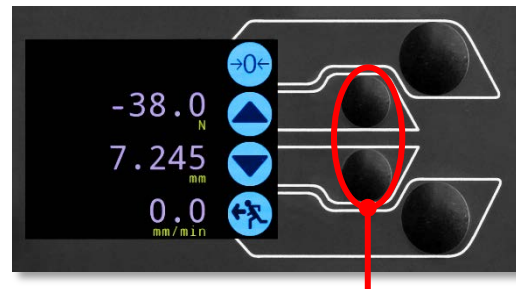
Static: Test stopped/limit triggered

Jog Mode

When in jog mode the wheel drives the crosshead directly up (clockwise) or down (anticlockwise). This offers more variable control when compared to the two fixed speed jog control buttons (circled in red below).



Enter jog mode



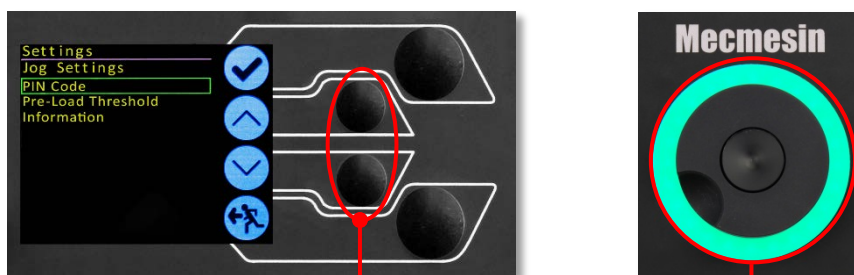
Jog control buttons

The scroll wheel can also be used as a speed controller. The jog buttons move the crosshead at the set speeds (configured in the 'Jog Settings' menu picture below), but rotating the wheel clockwise whilst holding a jog button will increase the speed and rotating the wheel anticlockwise whilst holding a jog button will decrease the speed.

OmniTest Twin Column test stands also feature a precision jog mode, rotating the scroll wheel while holding the central scroll wheel button moves the test stand at its minimum speed, this is useful when fitting specimens into grips for example.

Navigational Control

The scroll wheel can also be used to navigate the menus. When in a selection menu, the scroll wheel cycles through the selections and their values. This is an alternate navigational option to using the up and down arrow buttons.



Menu: operates with buttons or wheel

The Button

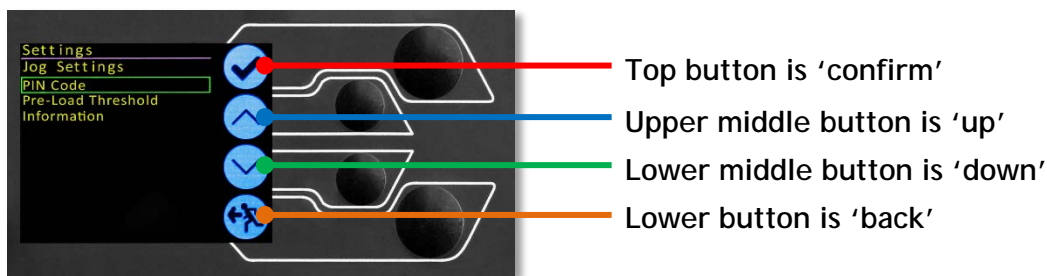
The central button is used to confirm a menu selection. It is equivalent to the tick button.

It can also be used to activate fine jog control, by rotating the scroll wheel while holding the central scroll wheel button moves the test stand at its minimum speed.

OmniTest Display Panel

The display indicates the stand status, displays live values and is used to configure the test stands settings.





The purpose of the four multi-function button is indicated on screen by an adjacent icon. Below is an image showing a typical example of the on-screen icons in relation to the physical buttons.







On-Screen Icons

On-screen icons vary depending on the current state of the test stand and what functions the physical buttons perform at that point. Below are reference tables to help explain the icon definitions.






A: Pre-Test

Icon	Action
	No ELS connected.
	Go to jog mode.
	Go to settings.
	Move to the home position (zero position from the beginning of the previous test).





B: Test Stop

Icon	Action
	Stop test: This stops crosshead movement, leaving the stand in a state of test readiness. The message is 'Interrupted: User' and the test readiness buttons (A) are displayed as well as the home button.
	Emergency stop button pushed: Message: 'Emergency Stop!!!'. Release the emergency stop to regain control and remedy the situation before resuming testing. Note there is no on-screen icon for the emergency stop.
	Upper limit switch triggered: The crosshead has reached the upper travel limit, as set by the OmniTest Twin Column's limit switches, and stopped. Further travel in this direction is prevented.
	Lower limit switch triggered: The crosshead has reached the lower travel limit, as set by the OmniTest Twin Column's limit switches, and stopped. Further travel in this direction is prevented.

C: Jog Mode

Icon	Action
	Zero (tare) all system values.
	Move the crosshead upward at the set jog speed.
	Crosshead has reached an upper limit (load signal from a connected gauge, set to Stop, or a limit switch) and stopped.
	Move the crosshead downward at the set jog speed.
	Crosshead has reached a lower limit (load signal from a connected gauge, set to Stop, or a limit switch) and stopped.

D: Settings Menu

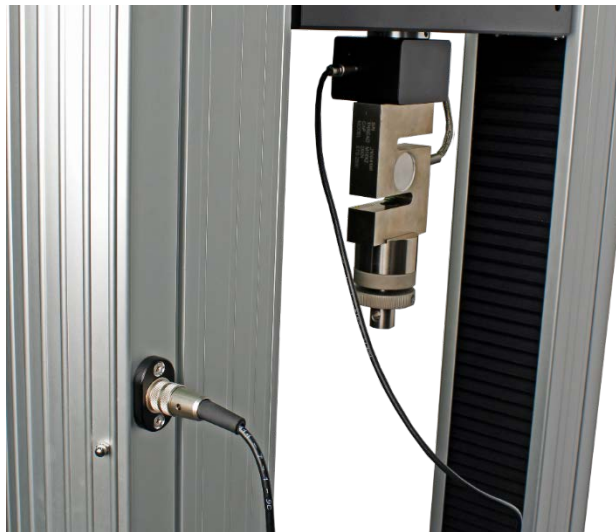
Icon	Action
	Confirm selection (or press the scroll wheel button).
	Navigate up a menu selection or value (or turn the wheel clockwise).
	Navigate down a menu selection or value (or turn the wheel anticlockwise).
	Go back to the previous screen.

5. Automatic ELS Firmware Update

All OmniTest Twin Column test stands with firmware 3.1.0.0 and above have the ability to update the firmware of any ELS device. This feature is seamlessly managed through the front panel and ensures that the latest firmware is on your ELS devices.

Step 1 - Connect Your ELS Device

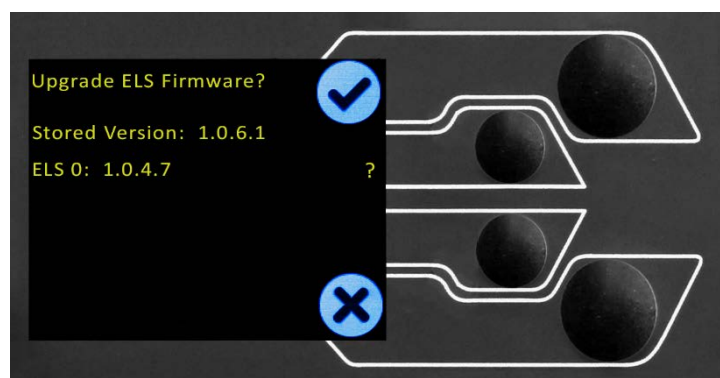
To start the update connect your ELS to your test stand, then switch the test stand on.



Note: Analogue short travel extensometers can also be updated in a similar method, simply plug the extensometer device into the corresponding connector on the rear of your OmniTest.

Step 2 - Starting the Upgrade

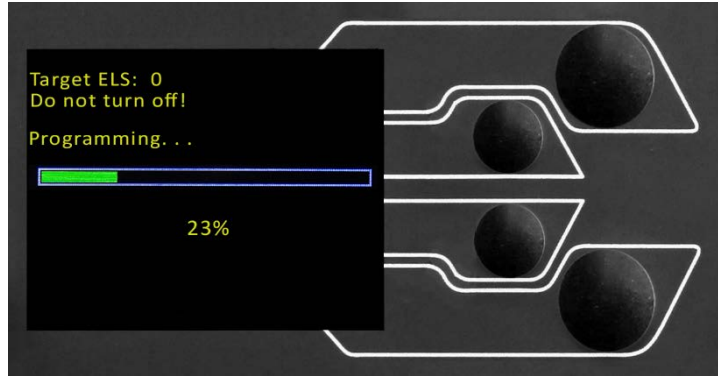
On the display located on the front panel of the test stand, you will be presented with the following screen.



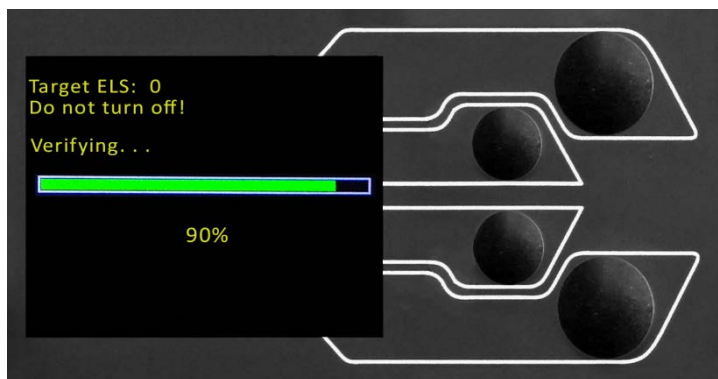
The new 'Stored' firmware is listed at the top of the display and the current ELS firmware is displayed below. In this instance the ELS current firmware is 1.0.4.7, starting the update will flash the device to version 1.0.6.1. If more than one ELS is connected (load cell and a short analogue extensometer) the additional device will be listed below ELS 0. To start the update of the first ELS device press the 'tick' icon.

Step 3 - Flashing the Device

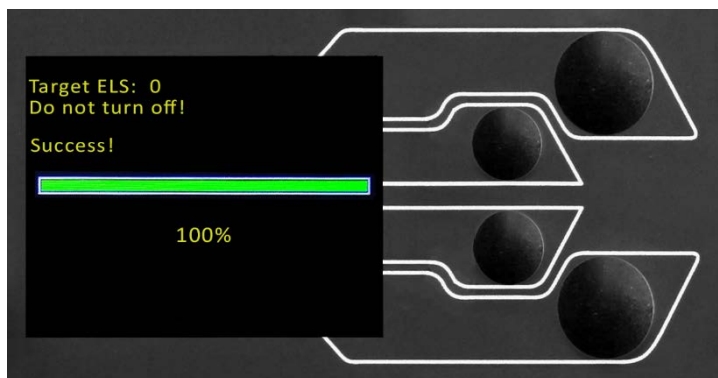
The flashing of the device is carried out automatically and progresses through several stages. It is important that the test stand is not turned off or disconnected. Disconnection of the ELS could lead to irreversible damage.



In the image above initial programming is taking place. You can monitor the progress using the bar and percentage readout below.



Within the final stage of the process, the firmware upgrade is verified to check that it has completed successfully.



Once the process is at 100% the display will indicate that the firmware upgrade has been successful. You will then either be prompted to update the next ELS device currently connected or the display will return to the start screen, if no additional ELS devices are connected. You can check the version of the ELS firmware manually by accessing the 'Information' screen located in the 'Settings' menu, **See Section 6** for more information.

6. OmniTest™ Twin Column Settings

All settings are made by moving the selection marker to the required item or digit and confirming with the tick button or using the central scroll wheel button.

Settings: Jog settings

Within the jog settings menu, you can configure the jog speed and force limits while in jog mode. Below is a detailed breakdown of each setting and the options available for each setting.

Setting	Action	Range
Up Speed	Configure the jog speed in an upward motion	0.050 to 1200 mm/min 0.002 to 47.24 Inch/min
Down Speed	Configure the jog speed in a downward motion	0.050 to 1200 mm/min 0.002 to 47.24 Inch/min
Tension Limit	Configure the tensile force limit for jog operations	Up to 2500N Up to 562 lbf
Compression Limit	Configure the compressive force limit for jog operations	Up to 2500N Up to 562 lbf

Settings: PIN Code

Within the PIN code menu, it is possible to set a four-digit number that can be used to lock the menu feature of your OmniTest Twin Column. Please note once this has been set you cannot access the menu without the PIN, so it is crucial that you keep a record of this safe. To remove the PIN code set the four digit number to '0000'.

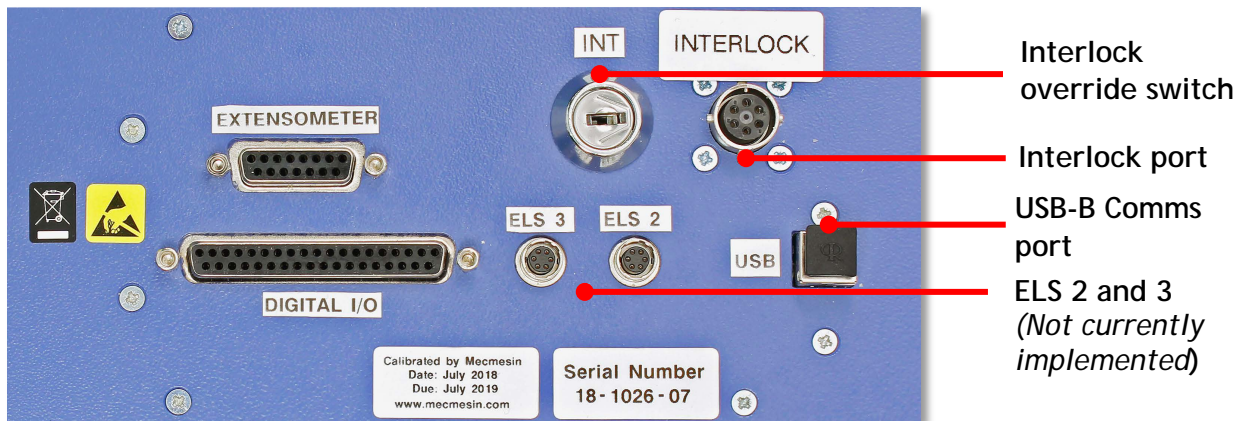
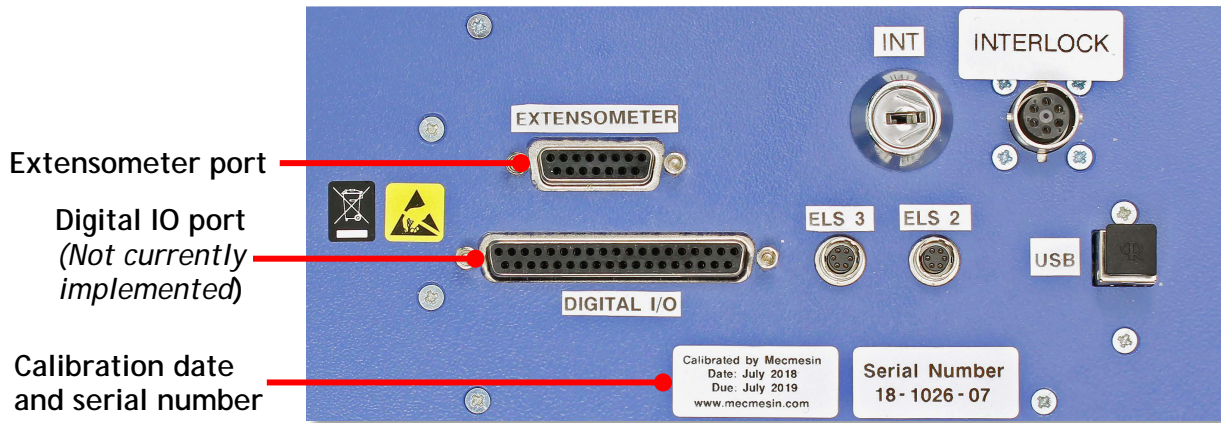
Settings: Pre-load Threshold

This menu displays the pre-load threshold as configured by VectorPro™, changes here will be overwritten by VectorPro next time you start a test.

Settings: Information

This screen is used to display key information relating to your OmniTest Twin Column and connected ELS devices. Here you can see software, hardware and firmware properties as well as the calibration date for the test stand and the number of overloads that have occurred for the current ELS.

7. Connectors Panel



8. OmniTest™ Twin Column Specification

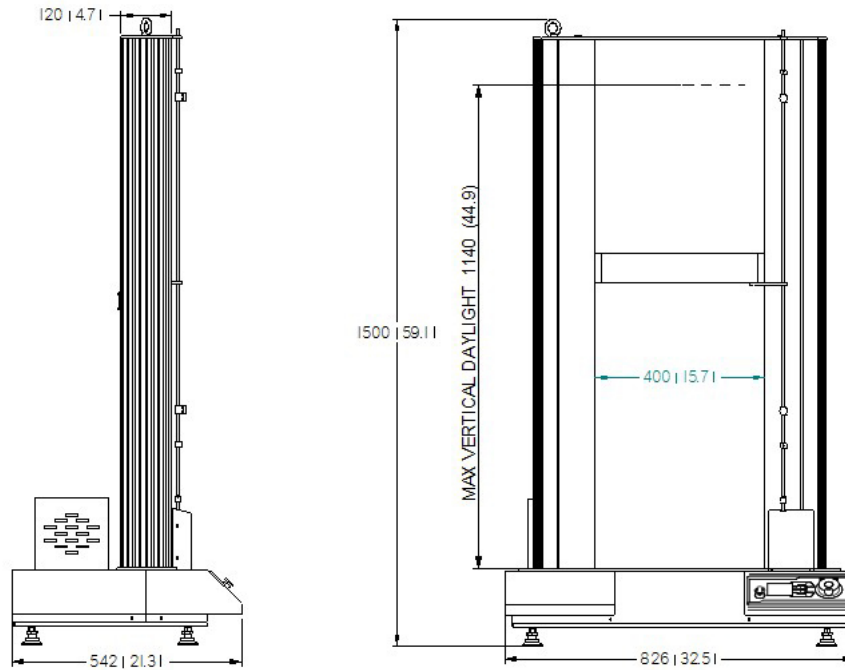
OmniTest Twin Column				
Rated capacity kN	kN	10	25	50
	kgf	1000	2500	5000
	lbf	2200	5500	11000
Number of ballscrews	2			
System accuracy	Class 0.5, according to the requirements of BS EN ISO7500 (requires optional on-site UKAS accredited system calibration)			
Maximum sampling rate	500Hz			
Load holding	Yes			
Displacement				
Crosshead travel*		950mm (37.4")	950mm (37.4")	1100mm (43.3")
Resolution	1 µm			
Accuracy	±0.1% of indicated position or ±10 microns, whichever is greatest			
Speed				
Speed range	mm/min	0.05 to 1000	0.05 to 1000*	0.05 to 400**
	in/min	0.002 to 40	0.002 to 40	0.002 to 15
Speed resolution	0.001 mm/min (0.00004 in/min)			
Accuracy	±0.1% or ±20 microns/min of indicated speed (at steady state) whichever is greatest			
Dimensions				
Height		1500 mm (59.1")	1500 mm (59.1")	1931 mm (76")
Width		826 mm (32.5")	826 mm (32.5")	864 mm (34")
Depth		542 mm (21.3")	542 mm (21.3")	572 mm (22.5")
Vertical daylight*		1140 mm (44.9")	1140 mm (44.9")	1330 mm (52.4")
Distance between columns		400 mm (15.7")	400 mm (15.7")	420 mm (16.5")
Weight		140 kg (309 lbs)	140 kg (309 lbs)	285 kg (628 lbs)
Electrical supply				
Voltage	230 V AC 50 Hz or 110 V AC 60 Hz			
Maximum power requirement	450 W			
Enhanced Load Sensors (ELS)				
Sensor measurement accuracy	±0.5% of reading down to 5% of range			
Sensor measurement resolution	>1:25000 filtered from 24 bit			
Internal sampling rate	20 kHz			
Environment specification				
Operating temperature	10°C to 40°C			
Operating relative humidity	30%-80% (non-condensing)			

* 25 kN - recommended maximum speed = 500mm/min (20in/min) above 10 kN ** 50 kN – recommended maximum speed = 250mm/min (10in/min) above 25 kN

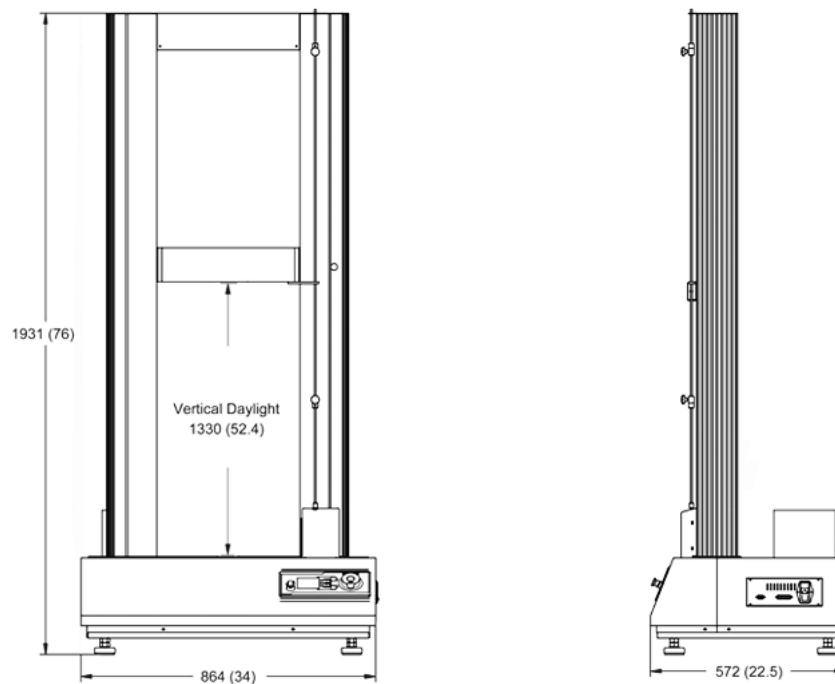
Software and communications	
Connectivity	USB port, extensometer input, 3 x low voltage additional sensor inputs with future expansion capability
PC requirements (recommended)	Intel Core i5 processor, 8GB RAM, one USB 2.0 or 3.0 port, SSD hard drive with 10GB free space, screen resolution 1920x1080 full HD
PC requirements (minimum)	Intel/AMD dual core processor with 2 GHz or faster clock speed, 4 GB RAM, one USB 2.0 or 3.0 port, hard drive with 10 GB free space, screen resolution 1080x720
Operating system (OS)	Compatible OS: Windows 7 or Windows 10 (32 or 64 bit)
	Recommended OS: Windows 10 Pro 64 bit
Data output	You can export as PDF, XLSX, CSV, TXT, Email and image files

9. OmniTest™ Twin Column Dimensions

OmniTest 10kN and 25kN



OmniTest 50kN



Declaration of Conformity

Mecmesin Ltd
Newton House
Spring Copse Business Park
Slinfold
West Sussex, RH13 0SZ
United Kingdom



Date of Issue April 30th 2018

EC DECLARATION OF CONFORMITY

We confirm that the Technical Construction Files for the product(s) identified on this certificate comply with the essential safety requirements of the following EU Council directives. Technical documentation to support this is available from the above address.

- Machineries Directive 2006/42/EU
- EMC Directive 2014/30/EU

They were tested to the following standards and other normative documents:

- EN 61000-6-1:2007 Electromagnetic compatibility (EMC). Generic standards.
- EN 61000-4-3:2006 +A2:2010 Electromagnetic compatibility (EMC). Testing and measurement techniques.
- EN 60204-1:2006 +A1:2009 Safety of machinery. Electrical equipment of machines. General requirements
- EN 61010-1:2010 Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements
- EN 60950-1:2006 +A2:2013 Information technology equipment. Safety. General requirements

Primary Product Name(s): Omnitest 10, OmniTest 25, OmniTest 50

Derivative Product(s):

Signed on behalf of Mecmesin Ltd

Technical Director: Patrick Collins

Registered in England No. 1302639



431-DoC28-01_L00

Mecmesin

testing to perfection

Mecmesin : a world leader in affordable force and torque testing solutions

Since 1977, Mecmesin has assisted thousands of companies achieve enhanced quality control in design and production. The Mecmesin brand represents excellence in accuracy, build, service, and value. In production centres and research labs worldwide, designers, engineers, operators, and quality managers endorse Mecmesin force and torque testing systems for their high performance across countless applications.

www.mecmesin.com

Algeria	Estonia	Lithuania	Slovakia
Argentina	Finland	Macedonia	Slovenia
Australia	France	Malaysia	South Africa
Austria	Germany	Mexico	Spain
Bangladesh	Greece	Morocco	Sri Lanka
Belgium	Hungary	Myanmar (Burma)	Sweden
Brazil	India	Netherlands	Switzerland
Bulgaria	Indonesia	New Zealand	Syria
Cambodia	Iran	Norway	Taiwan
Canada	Ireland	Paraguay	Thailand
Chile	Israel	Peru	Tunisia
China	Italy	Philippines	Turkey
Colombia	Japan	Poland	UK
Costa Rica	Korea South	Portugal	UnitedArab Emirates
Croatia	Kosovo	Romania	Uruguay
Czech Republic	Kuwait	Russia	USA
Denmark	Laos	Saudi Arabia	Vietnam
Ecuador	Latvia	Serbia	
Egypt	Lebanon	Singapore	

The Mecmesin global distribution network guarantees your testing solution is rapidly delivered and efficiently serviced, wherever you are.



FS 58553

Head Office - UK

Mecmesin Limited

w: www.mecmesin.com

e: sales@mecmesin.com

North America

Mecmesin Corporation

w: www.mecmesincorp.com

e: info@mecmesincorp.com

France

Mecmesin France

w : www.mecmesin.fr

e: contact@mecmesin.fr

Asia

Mecmesin Asia Co. Ltd

w: www.mecmesinasia.com

e: sales@mecmesinasia.com

Germany

Mecmesin GmbH

w: www.mecmesin.de

e: info@mecmesin.de

China

Mecmesin (Shanghai) Pte Ltd

w: www.mecmesin.cn

e: sales@mecmesin.cn