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SAFETY INTRUCTIONS

Due to the potential hazards associated with any electrical instrument, it is important that the user is familiar with the instructions covering the capabilities and operation of the instrument. The user should ensure that all reasonable safety precautions are followed and if in any doubt should seek professional advice before proceeding.

The instrument is designed for use by suitably trained, competent personnel in a controlled working environment and is intended for use as a Universal Materials Tester.

Testometric cannot be held responsible for any unauthorised modifications to this equipment.

WARNING

This unit contains hazardous live voltages. Under no circumstances should the user try to prevent or restrict the movement of parts, either personally or with the aid of foreign bodies. All ventilation slots must be kept clear.

PROVISION FOR LIFTING AND CARRYING

When unpacking or moving this unit, extreme care is required owing to its physical construction and weight.

It is recommended that accepted lifting and carrying procedures are employed and that personnel wear the appropriate protective equipment e.g. safety shoes. If the unit is to be moved an appreciable distance or height, it is recommended that it is moved via a suitable vehicle e.g. a fork lift truck.

OPERATING ENVIRONMENT

This unit is intended to be used in a residential, commercial and light industrial environment as laid down in BSEN 50081-1 and BSEN 50082-1.

Safety Instructions



The following are examples of locations in which the instrument might be located - workshops, laboratories and service centres and locations which are considered to be suitable for commercial or light industrial activity.

CLIMATIC ENVIRONMENT

The unit is intended to operate within the following conditions:

- i) Temp 5-55 deg Celsius
- ii) Humidity 30-95% RH
- iii) Altitude <2000m above sea level.

The unit is intended to be stored in a temp range of 0 to + 25 deg Celsius.

ELECTRICAL INFORMATION

This unit complies with BSEN 61010-1 1993 safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use.



ELECTRICAL CONNECTIONS

350/500 Models with single phase supply.

Depending on the version supplied, the AT and CT single phase models are all supplied with a power cable with a 10A rating. The supply to the equipment must use a correct earth grounding connection.

If circuit breakers are in the supply circuit then Type K 10A are recommended.

Each single phase model is supplied with a power inlet with the following fuses fitted (2 fuses per inlet):

Power inlet fuse 350 type machine	Rating
Position A 220/240v 1PH 50Hz	5 A Type T
Position B 110/120v 1PH 60Hz	5 A Type T
Power inlet fuse 500 type machine	Rating
Position A 220/230/240v 1PH 50Hz	6.3 A Type T
Position B 110/115/120v 1PH 60Hz	6.3 A Type T

To change the voltage setting:-

Release the front cover of the power inlet, allowing the voltage selection module to be unplugged, reversed and re-inserted.

AT/CT Power inlet - Position B (115v) shown



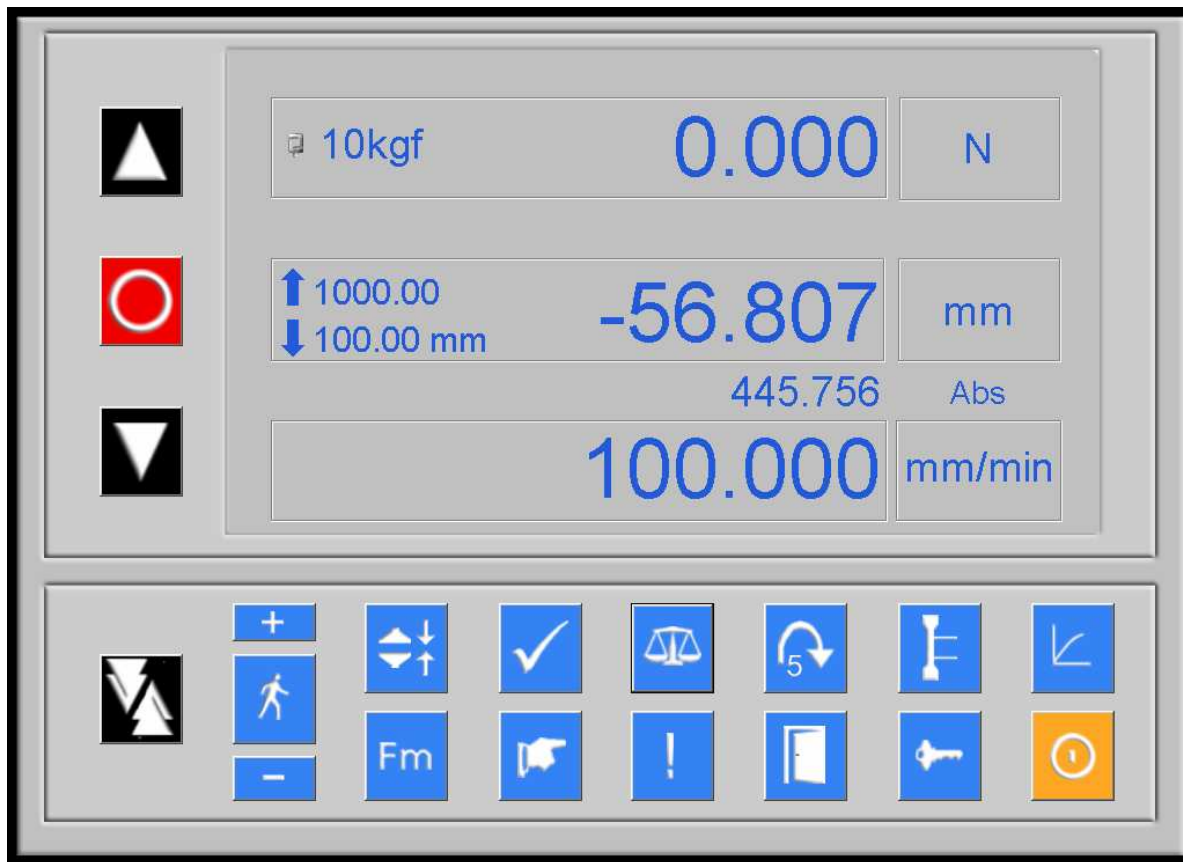
500/FS Models with 3 phase supplies

AT and CT FS models with three phase supplies should be fused externally with a 16A/phase rating or 16A/phase Type K circuit breakers.

WARNING! *Insulation/Flash testing involves high voltages and should not be carried out on this type of equipment as damage to electronic devices could result.*

Control/Functions

CONTROL PANEL



Selects the UP crosshead direction.

Stops the crosshead.

Selects the DOWN crosshead direction.

Selects/deselects Fast Jog function.



Sets the force readout to zero.

(Note: Pressing the TARE button after the specimen has been compressed or tensioned will produce incorrect results)



Resets the relative extension readings to zero and cancels maximum force value.



The CAL check facility is a useful check on the current error within the system. When the CAL button is pressed the force reading will display 50% of the load cell capacity (usually in N or kgf). If the reading exceeds 0.5% error, the system could be out of calibration – refer to troubleshooting section.

Control/Functions



Selection 0 (off) – 9 (most sensitive). The break detection system (SBD) monitors the rate of change of force during a test and is set to stop the tester crosshead when force fall off is detected.

① As materials react differently under test conditions, the level at which break detection operates can be adjusted by increasing or decreasing the SBD figure.

For example: When testing single thread yarn, the BREAK DETECTION needs to be set at its most sensitive so that the system detects a small fall-off in force value. When testing fabric, the BREAK DETECTION needs to be set to a low number so that the crosshead does not stop as each individual thread breaks.

Selecting '0' disables the sample break detection.

Selects/deselects maximum force displayed during a test



Compression mode selected



Tension mode selected



Selects/deselects the Jog function. When selected the return-to-start function is not in operation



Selects/deselects an extensometer if fitted



Zeros an extensometer if fitted



Password protected access to Factory settings



Enters the WinTest Analysis software; see pages 8 to 10



Provides the ability to perform simple tensile and compression testing, giving results of Force @ Peak and Elongation @ Break.



Exits the software and returns to the operating system

Quick Start

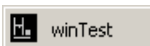
QUICKSTART

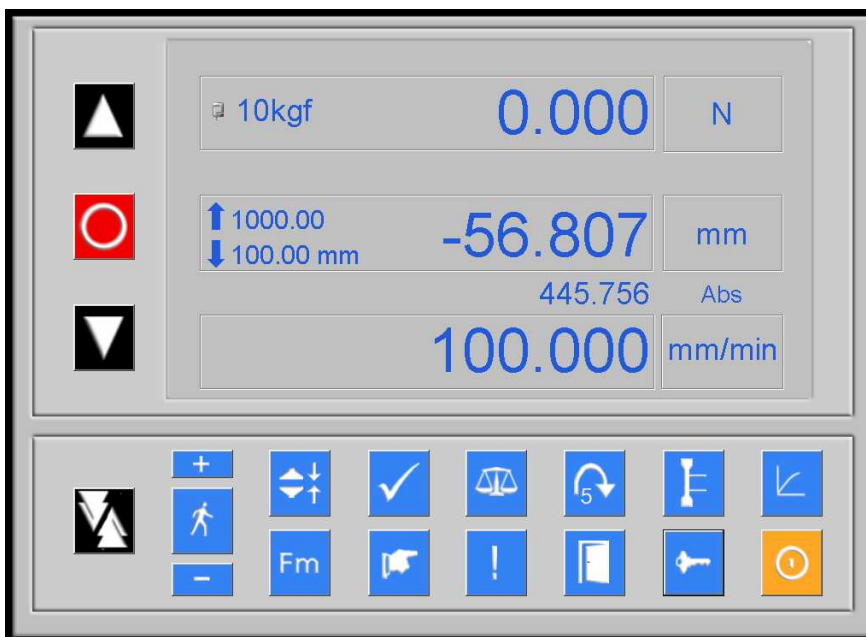
1. Remove all packing material and place the testing machine on a level bench.
2. Connect the load cell lead into the side of the enclosure behind the load frame.
3. Connect the supplied serial interface lead from the testing machine (RS232) connector to the PC serial port – default COM port 1.
4. Switch on the PC and tester.

IMPORTANT ⓘ - Ensure that the power saving option for the monitor is disabled in Windows (already configured on AT machines).
















5. If using an AT testing machine, skip this step.

Insert the supplied CD. If the installation does not auto start, run D:\Setup.exe in an Explorer window (where D: is the drive letter of your cd/dvd drive). Follow installation prompts.

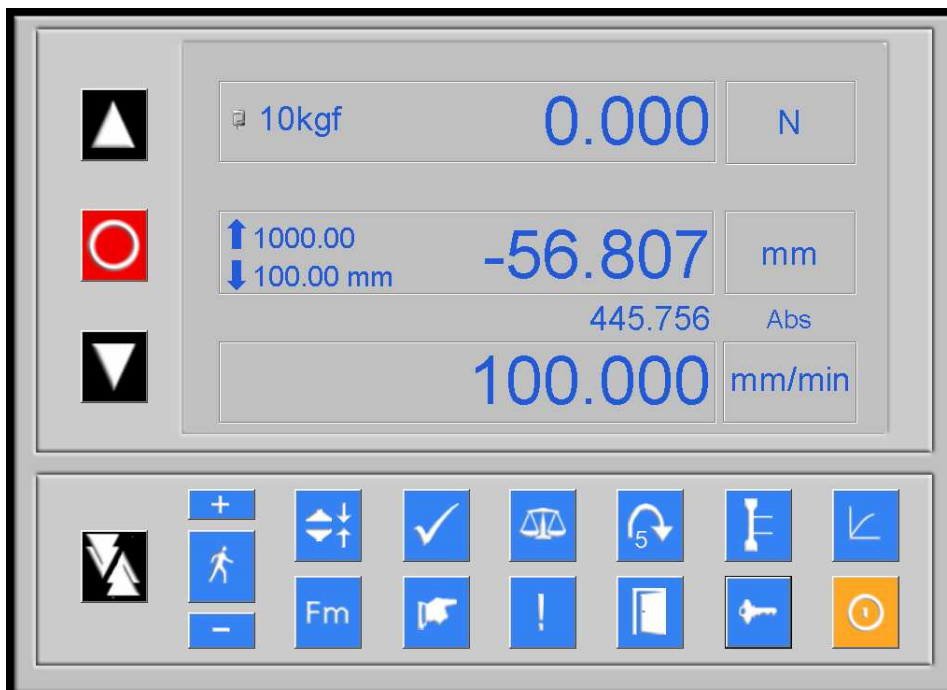
6. Press the *Start* button in the taskbar and move pointer up to *Programs*. Click  to run program.
7. Check that the load cell capacity displayed on the control panel is the same as on the load cell, e.g. 10 kgf. If there is more than one load cell the machine will automatically detect which cell is connected.



Quick Start

8. Move the crosshead to a suitable position to attach the grips by pressing UP  or DOWN . Press  to STOP. Press  to FAST JOG or  to adjust JOG speed.
9. Attach grips with pins provided.
10. Move the crosshead to the test start position. To alter test mode press  to change from TENSION to COMPRESSION .
11. Set the control panel to the required test speed by clicking on the speed indication box and entering the speed e.g. 100 mm/min. The load and extension units can be changed by clicking on the load unit box e.g. N and mm.
12. Press  to alter the sample break detection (SBD) (0 is off, 9 is the most sensitive).
13. Press  to select/deselect peak force during a test.
14. Press  to define the test start position and zero relative extension.
15. Press  to TARE (zero) the load reading.
16. Insert the test sample and clamp the grips.
17. The system should now be ready to perform a test. To perform a basic test press UP  in TENSION  mode, or DOWN  in COMPRESSION  mode.

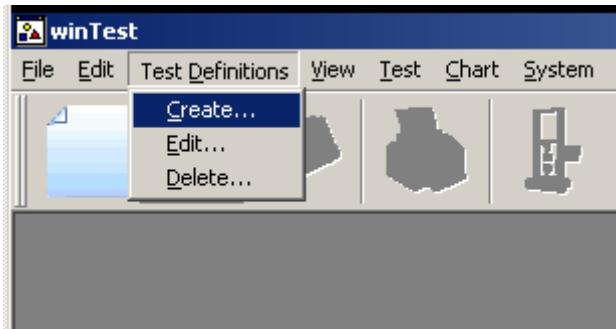
To view the test in a real time graph press . For more test options press .



Quick Start

Procedure for creating a new test definition

1. From the headings select **Test Definitions** and then **Create**.

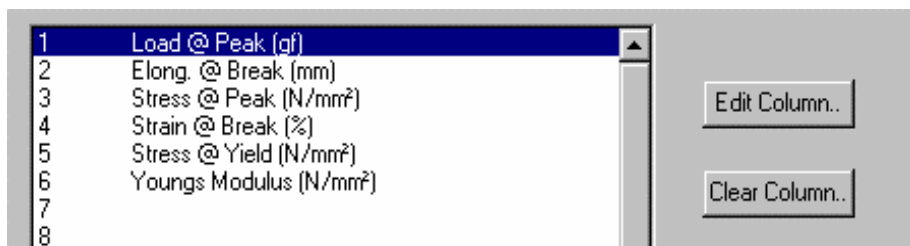


2. The **Create Test Name** dialog box will be shown.
Enter desired **Test Name**.
If a variation of an existing test definition is required, then select **from Test** and select the required test definition from the drop down list.
If a new definition is required, select **OK** after entering the test name.
3. The **Create Test Definition** dialog box will appear.
4. Enter **Test Type** from the drop down list e.g. *Tensile*.

Enter **Sample Type** from drop down list e.g. *Rectangular*. Enter relevant sample sizes plus desired units as required in the **Test Parameters** and **Sample Dimensions** boxes.
5. Select **Individual dimensions per test** if you wish to view or input individual specimen dimensions before every test. Add these dimensions to the calculations list e.g. width and thickness.
6. By selecting the **Calculations** tab the calculations for the test definition can be selected.


Choose the desired calculation by highlighting the column number and then selecting the **Edit Column..** button.

e.g.




Quick Start

Up to 30 columns can be selected by using the scroll bar. Units default to SI system but can be changed individually or globally by selecting either *Metric* or *Imperial* keys.




7. The Input Value is used where inputs for measured values are required i.e. *Force at Elongation* - enter the value of elongation at which the force value is to be found. Default values will appear but they can be adjusted as required.
8. Selecting the **Chart Set-Up** tab will allow the user to define graph axis etc. The use of *Auto* will override any maximum values and automatically re-scale as necessary.
9. To store the test definition press the *OK* button. The definition will then be added to the list for future use by selecting the  icon to create a new test series.

Quick Start

Procedure for conducting a test from a stored test definition

1. Choose either **File** and **New** or select the  icon from the toolbar.



2. Select **Test Definitions** and choose the required test name from the drop down menu, then select **OK**.
3. Enter any necessary references in the **Test Headings** dialog box. Then select **OK** to conduct testing.
4. Selecting **Start Test** will open the *Real Time Window* (via *Sample Dimensions* dialog has been selected).
5. Load the specimen in the jaws and select the ▲ or ▼ icon on the display depending if the test is tensile or compression. The test will commence and plot a real time curve on the PC monitor.
6. At the end of the test select the  icon which will store the results in preparation for the next test.
7. To return to the test results screen select the  icon.
8. The results can be printed out by selecting either **File** and **Print** or the  icon.

Quick Start

Installing predefined Test Methods

Software installation (CT testing machines)

1. Ensure WinTest Analysis is installed.
2. Insert the Standards Installer CD into your CD ROM drive.
3. If the installation does not automatically run, navigate to the SETUP.EXE file on the CD ROM and double click this to commence installation.

If the Standards Database software is already installed and you are installing additional test methods, the installer will recognise this situation and prompt the user for confirmation before continuing to update.

Running the software

A shortcut will be found on the desktop, by double clicking this short cut or selecting the *Standards* entry from the *Start* Menu the software will run.

On running the software you will presented with the following dialog box.



If WinTest Analysis is not found automatically it will be necessary to locate WinTest Analysis by pressing the "Browse" button and locating the *defn.db* file.

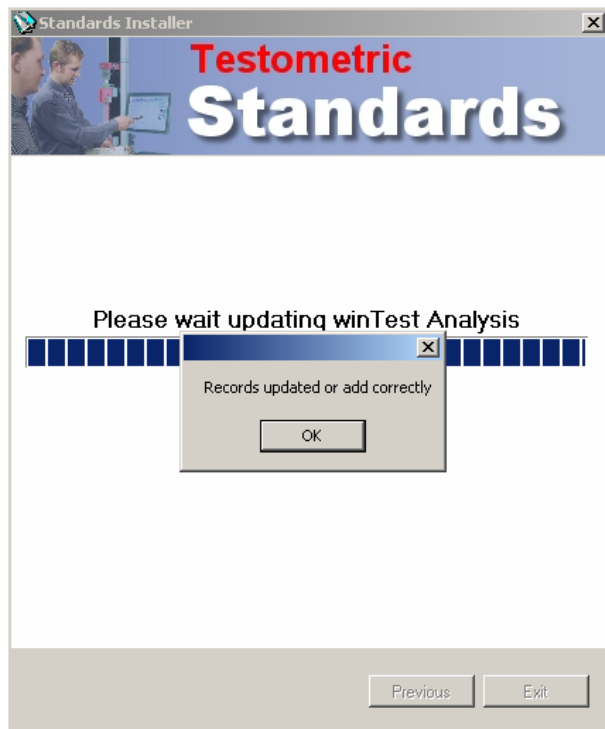
By pressing *Next* a list of test methods constructed in accordance to your requirements will be presented.

Quick Start

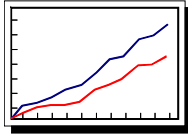


To install all the test methods press the *Check All* button. If only specific test methods need to be installed place a tick next to the desired method name.

Pressing the *Export* button will transfer the selected test methods to WinTest Analysis



Tool Bar



Print

Produces a hard copy of graph and/or results.



Start Test

Tests are conducted for a new or existing series. Note that the crosshead should previously have been returned to the correct start position.



Test Deletion

Enables the user to select/deselect tests that are to be removed from a test series.



Communications

Allows the configuration of communication parameters between Tester and PC or any other compatible device and PC.



Colour Control

Allows colour selections.



Control Panel

Click on the CT/AT Panel icon to return to the CT/AT Control panel.



PROTECTION

EMERGENCY STOP

Operation of this switch disables the motor drive power stage and resets the crosshead control selection.

OVERLOAD

If the cell is taken to an overload condition the crosshead will be stopped automatically without damage to the load cell. OVERLOAD will appear on the display. You should return the tester to back-off the force, then press the end test button to reset the system.

OVERTRAVEL

Overtravel protection is provided by factory set internal limits based on the Absolute measurement system which will stop the crosshead at the limits of travel.

IMPACT

Impact protection will stop the crosshead if the grips or fixtures are brought into contact accidentally on crosshead return i.e. when fitting larger grips and not re-setting the knock-off block.

Note ① : Impact protection does not offer full protection and care should always be exercised to avoid impacting the grips and/or load cell.





TROUBLESHOOTING

Before commencing any troubleshooting it is recommended that the Tester Control Panel is displayed on the PC.

The low-level troubleshooting section is categorised below:-

- i. Crosshead cannot be driven
- ii. Force reading static or incorrect
- iii. No extension readings
- iv. No communications with computer



i) Crosshead cannot be driven

- Check that speed is not set to 000.00mm/min (or 00.000in/min)
- Check that the machine is powered up and that the *Emergency Stop* button's red led is on.
- Check that the control panel force display is active and the force reading changes when a small force is applied to the load cell.
- Check there is no *Cell Impact* condition. Note that this condition can occur if a high negative force has not been zeroed, by depressing the button, prior to running the crosshead  in tension mode. It is important to note that the button should NOT  be used to remove any positive force reading after the specimen has been fixed in the grips. The operator should always confirm that the force reading is near zero before specimens are loaded, so that any pre-loading of the specimen when the grips are tightened is accounted for during the test.
- Check the load cell is connected. (If the load cell is left unplugged the force system can temporarily drift into an OVERLOAD condition.)
- Check Sample Break Detection (SBD) setting and confirm that the setting is not oversensitive for the type of material being tested.
- Check that the displayed speed is correct.

ii) Force reading static or incorrect


- Check that the load cell is connected.
- Check the load cell for damage.
- This condition can be investigated further by checking the pre-tare reading. A reading outside of +/- 10% of cell range indicates that the cell could be damaged. To check pre-tare value, depower and repower the machine. The pre-tare force reading should be < +/- 10% of cell range.
- Check load cell wires and connections.



- Loss of load cell data due to memory corruption. This condition can be checked by performing a Calibration Check function by pressing the calibration button  on the control panel. The Force reading should be 50% (+/-0.5%) of the capacity of the load cell.
- If there is a suspicion of memory corruption then a system re-format may be necessary and the Service agency will need to be contacted. Useful information to help with this are the system settings, which can easily be copied onto the clipboard for pasting into another application, and then printed out or e-mailed etc. Click on the key  in the control panel and then click on *View, Copy* and *OK*. Exit the control panel and paste the settings into the desired application.
- Contact Service agency for further details.

iii) No extension readings

If there are problems with an extensometer (ME1 or 4, DEA, 4x1000 or M2):

Check that it is selected/de-selected using the select/deselect button 

- Check that the device is connected to the correct input/output socket on the rear panel of the machine.
- Ensure that the extensometer is fully closed onto the setting stops before commencing a test.
- Ensure that the extensometer and/or transducer (if fitted) are set to operate at the desired gauge length before commencing a test.
- Ensure that the extensometer clamping faces are not slipping on the sample, thereby reducing the overall extension reading. If slippage is suspected it should be possible to adjust the position of the knife edges so that they are fully closed and clamp the sample throughout the test.

iv) No communications with computer

- With a CT machine, check that the supplied serial lead is connected to the RS232 9 way socket and inserted into the correct COM port on the PC.
- Check the COM port settings on the PC – refer to Windows setup.
- Confirm that the *Emergency Stop* button's red led is ON.
- PC troubleshooting is possible using HyperTerminal in Windows.
- Select Accessories – HyperTerminal
- The data frame from the testing machine is set to 19200 Baud, 8 data bits, 1 start and stop bit. Select the correct COM port – default COM 1.

APPENDIX A

If the machine settings button is selected then the only options available to the user are View or Exit. The other options:- Configuration, Factory, and Reset Absolute contain factory set details and parameters which are password protected. Details can be provided on request. Please contact Service Agency.

