

hanatek

PRECISION THICKNESS GAUGE



MODEL FT3

OPERATING MANUAL

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Contents

Storage and Handling.....	3
About the Hanatek FT3	4
Packing List.....	5
Assembly	6
Set Time/Date & Adjust Touch Screen Calibration.....	8
Operation	9
Setting Test Options.....	10
Test Types	11
Further Options.....	12
Taking a Single Reading.....	13
Multiple Measurements and Statistics	14
Comparison Mode	16
Pass Fail	18
Sheet Count (option).....	20
Using the Footswitch (option)	22
SERVICE	23
EU Directive 2002/96/EC on WEEE (Waste Electrical & Electronic Equipment) and RoHS (Restriction of the use of certain Hazardous Substances).....	24

Storage and Handling

WARNING – THE HANATEK FT3 HAS MOVING PARTS WHICH MAY CONSTITUTE A PINCHING RISK FOR FINGERS.

REASONABLE CARE MUST BE TAKEN AT ALL TIMES – DO NOT TOUCH THE MOVING PARTS DURING OPERATION AND ENSURE HAIR AND CLOTHING IS KEPT CLEAR.

Avoid using the instrument in areas where vibration may affect the readings; i.e. close to heavy machinery.

Due to the high resolution of the instrument, changes in temperature will affect instrument readings

-Avoid placing in direct sunlight.

-For best results use in a temperature controlled environment

This instrument contains precision components. Avoid knocking or dropping the device as the resulting impact could cause serious damage.

Inaccuracies in measurements may be seen if the instrument is used before it has stabilised to ambient temperature.

Ensure that the instrument is not exposed to moisture, chemicals or to any corrosive vapours.

Prevent exposure of the instrument to continuous humidity and condensation.

About the Hanatek FT3

The Hanatek FT3 Precision Thickness Gauge is specifically designed to quickly and accurately measure the thickness of a variety of substrates including film, paper, board, foil, tissue and textiles.

Operated via an intuitive touch screen interface the instrument will allow the user to define batch size, dwell time & measuring speed.

Full test statistics can be easily viewed or printed to label for easy documentation control.

Contact pressure and contact area are factory set options dependent on the testing standard used. For a full list of standards please refer to <http://www.hanatekinstruments.com/Precision-Thickness-Tester.html>

Resolution:	0.1 μm
Repeatability:	Better than 0.4 μm (dependant on operating conditions)
Reproducibility:	Better than 0.8 μm (dependant on operating conditions)
Measurement Range:	0-4000 μm (0 – 19000 μm extended range instrument also available)
Output:	RS 232
Power:	110/240V 50/60 Hz
Flatness of measurement head/anvil	< 0.1 μm
Measurement head/anvil typical parallelism	< 1 μm

For testing to multiple standards please use the Hanatek [Variable Force Precision Thickness Gauge FT3-V](#)

Packing List

FT3 Thickness Gauge
2000µm Check Gauge
500 µm Check Gauge
Bulls Eye Spirit Level
Foot adjustment spanner
Calibration Certificate

OPTIONAL EXTRAS

Hanatek Results Printer
Additional Downforce weights (FT3-V)
Footswitch

Assembly

Unpack the unit carefully and check the contents against the packing list.

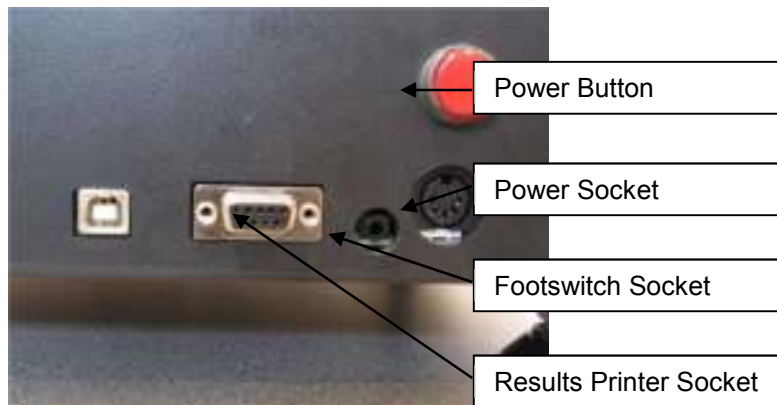
Place the instrument on a suitable bench.

Ensure the instrument is level before use.

Place a spirit level central on the measurement platen and adjust the feet until the spirit level bubble remains central. This is important and must be periodically checked and adjusted every time the equipment is moved.



Plug the instrument into a suitable mains supply and switch on using the main power switch.



The instrument will display the Hanatek Logo. click anywhere on the touch screen to continue.

The instrument will then display the temperature stabilisation screen.

The temperature of the sensor conditioning circuitry is monitored by the instrument CPU, once this becomes stable the instrument will automatically enter measurement mode. The user can skip this stage by pressing the “Skip” button, this is not recommended as it affects the accuracy of measurement.



The instrument automatically switches into measurement mode when stability is reached (usually <2 mins).

Set Time/Date & Adjust Touch Screen Calibration

When powering up the instrument, press and hold all three buttons on the front of the instrument. You will first be asked to calibrate the touch screen. Follow the on screen prompts. This will be followed by the option to adjust time and date settings.

Instrument Calibration

Contact an authorised Hanatek Instruments Agent for more information about instrument calibration.

WARNING- CALIBRATION SHOULD ONLY BE ATTEMPTED BY AUTHORISED CALIBRATION PERSONNEL USING AUTHORISED CALIBRATION EQUIPMENT.

A TWELVE MONTH CALIBRATION INTERVAL IS RECOMMENDED FOR THIS INSTRUMENT.

Operation

The instrument has a touch sensitive screen, alternatively there are three buttons on the front of the instrument which correspond to the three colour coded buttons displayed on the screen. Many of the operations on the instrument can be performed using the touch screen or physical buttons.



Cleaning the Measurement Head

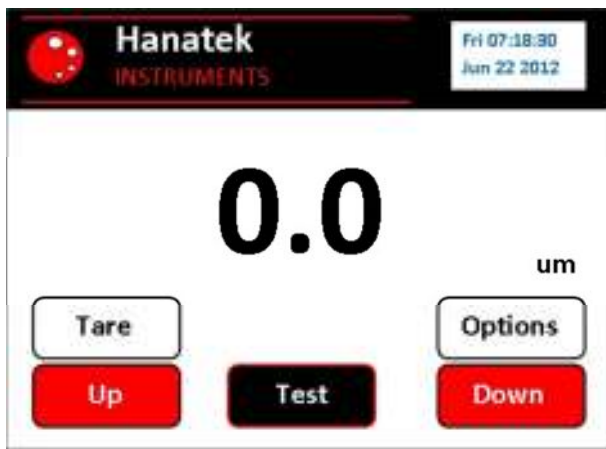
Dust and debris can significantly alter results (a speck of dust may measure 10 microns or more).

Use a camera optics blower brush to remove dust and debris. If the foot becomes lightly contaminated, put a sheet of heavy photocopy paper under the measurement foot in the down position. Carefully slide it out, this will remove most debris.

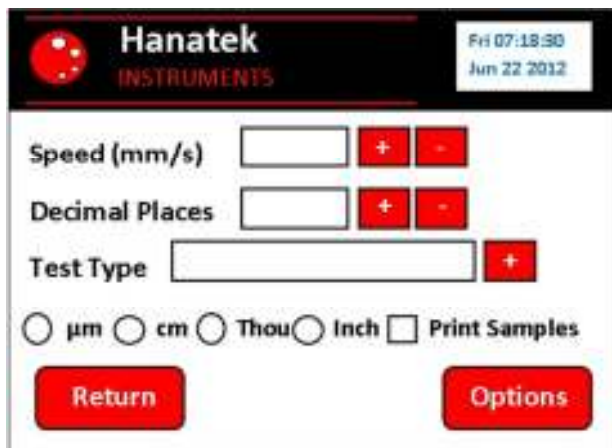
In cases of extreme contamination a cotton bud soaked in alcohol (IPA) can be used to clean the measurement area.

***Measurement tip- Changes in temperature affect the accuracy of the instrument.
Where possible allow 30mins for the instrument to reach temperature before use.
For maximum accuracy use in a temperature controlled environment.
To reduce/eliminate the effect of temperature change, regularly tare the instrument zero.
An auto-tare option is can be selected in the set up menu.***

Setting Test Options



Press the “Options” button to enter the options menu



Speed

The down speed of the measurement foot can be adjusted using the +/- buttons.

Measurement tip- A slower speed <3mm/sec is recommended for softer materials as the higher energy impact at faster speed may distort/damage the surface.

Decimal Places

The resolution of the instrument can be adjusted using the +/- buttons.

The maximum resolution of the Standard FT3 is 0.1 micron/ 0.01 Thou.

Measurement tip- If an increased accuracy is required, the Ultra Precision Thickness Gauge has an available resolution of 0.01 Micron/0.001 Thou and has a granite measurement bed for increased repeatability.

Test Types

Standard

This option is for measuring samples sets using pre-defined up and down times as well as the speed of the measurement head.

Tare Standard

When this option is selected, the instrument is automatically TARED before each sample set is measured. This option virtually eliminates thermo/electronic drift and thermo mechanical errors from measurement.

Comparison

This option puts the instrument into comparative test mode. This test is used to measure the relative thickness of a two materials. Two batches of readings are taken; the average thickness difference between the two values is displayed.

Pass Fail

This option allows the user to set a percentage tolerance for the samples under test. A target thickness or measured reference is entered into the test set-up screen before the test commences and readings are taken. PASS or FAIL is displayed at the end of the test to clearly indicate if the samples are within specification along with the statistics for the completed test. An auto results print option is also available.

Sheet Count (option)

This test mode will count sheets or layers of sample as well as showing the total thickness of a stack of samples. A master count of user selectable size is measured as a reference. This value is stored and subsequent measurements will be compared to this master reading. A pass fail option is available to reject any reading out of the desired tolerance.

Basic (option)

Will allow very basic operation of the instrument and is only recommended for use on shop floor areas where the user is not desired to adjust any test parameters.

Unit of Measurement

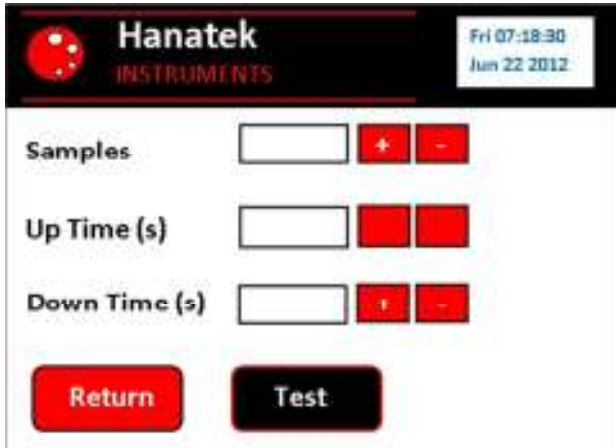
The measurement units can be switched between:
Microns, Centimetres, Thou, Inches

Print All Samples

This option allows all measured values in a test to be output to the Hanatek printer/ RS232 port.

Further Options

Press the “Options” button to access the second options menu.



The screenshot shows the Hanatek INSTRUMENTS interface. At the top left is the Hanatek logo and 'INSTRUMENTS' text. At the top right, the date and time are displayed as 'Fri 07:18:30 Jun 22 2012'. Below this, there are three rows of controls: 'Samples', 'Up Time (s)', and 'Down Time (s)'. Each row consists of a white input box followed by two red buttons with '+' and '-' symbols. At the bottom, there are two buttons: a red 'Return' button and a black 'Test' button.

Samples

This option selects the number of samples to be used in an automated test. When this number is reached the instrument will stop the test and display the statistics for these results.

UP Time

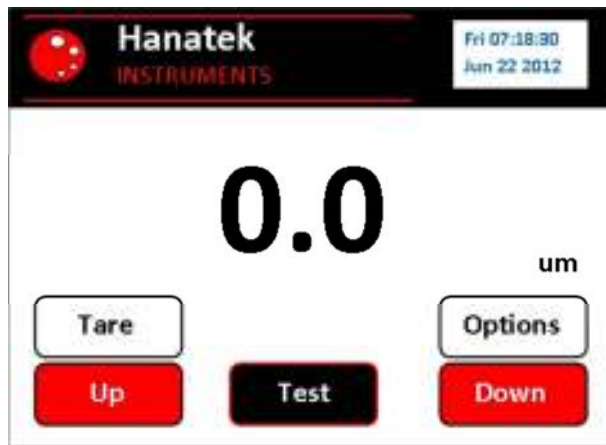
This value adjusts the delay time between sample measurement

DOWN Time

This value adjusts the dwell time of the sample foot during the test before the reading is recorded.

Measurement tip- For increased accuracy use a longer down time.

Taking a Single Reading



Push the “Down” button so the foot is in the DOWN position.

Press the “Tare” button to tare the instrument.

Use the “Up” button to raise the measurement foot.

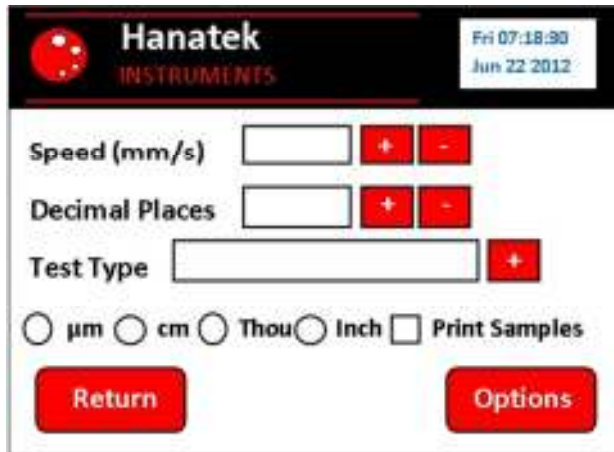
Place the sample under the measurement head.



Press the down button to lower the measurement foot. Allow for the measurement to stabilise and record the reading displayed.

Multiple Measurements and Statistics

Standard Mode



Hanatek
INSTRUMENTS

Fri 07:18:30
Jun 22 2012

Speed (mm/s) + -

Decimal Places + -

Test Type +

µm cm Thou Inch Print Samples

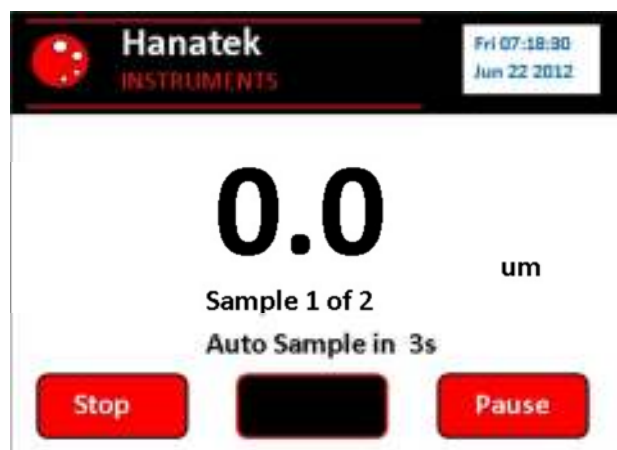
Return Options

Set up the test parameters in the options menus, select “standard” test method.

Place the sample under the measurement foot.



Press the “Start Button” to begin the test.



Hanatek
INSTRUMENTS

Fri 07:18:30
Jun 22 2012

0.0 um

Sample 1 of 2
Auto Sample in 3s

Stop [] Pause

When the foot is in the up position the sample can be repositioned (measuring the average thickness of a single sample) or replaced (measuring the average thickness of a sample set).

Press "Pause" to pause the test.

Press "Stop" to terminate the test and display the statistics for the measured values.

Once the instrument has completed measuring the required values the statistics will be displayed.



Press the print button to produce a results label, Hanatek results printer is required.

Measurement tip- Results Labels are securely time and date stamped. Sticking labels on to job sheet or retained samples proves the conformity of material throughout the batch run.



Measurement tip- To include details of all measured results in the print out click the "Print All Results" option in the instrument set up menu.

Comparison Mode

Comparison test allows the average difference to be measured between two different samples or 2 areas on the same sample.

Set up the test parameters in the options menus, select comparison test method.

Place the sample for under the measurement foot.



Press the “Start Button” to begin the test, measurements will now be made of the first sample/s.

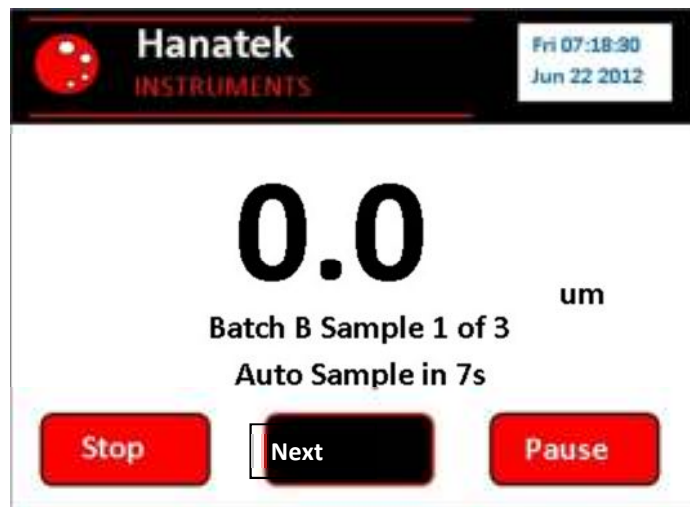


When the foot is in the up position the sample can be repositioned (measuring the average thickness of a single sample) or replaced (measuring the average thickness of a sample set).

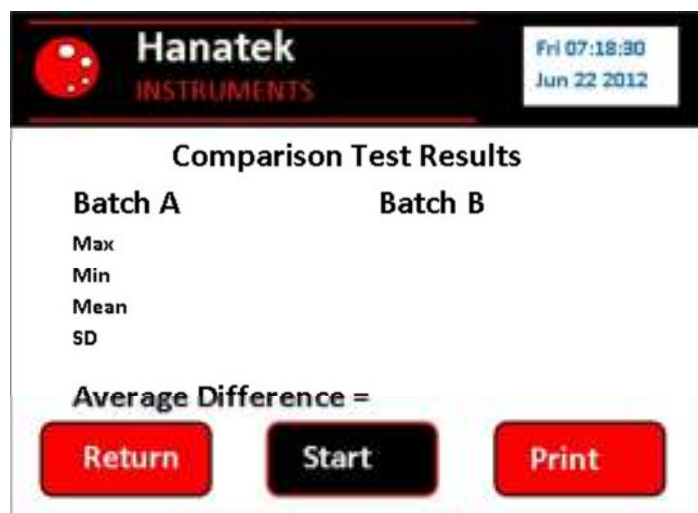
Press “Pause” to pause the test.

Press “Stop” to terminate the test and display the statistics for the measured values.

Once the first samples have been measured the instrument will pause prompting the user to sample the second batch. Place the next sample under the measurement foot and press “Next” to continue.

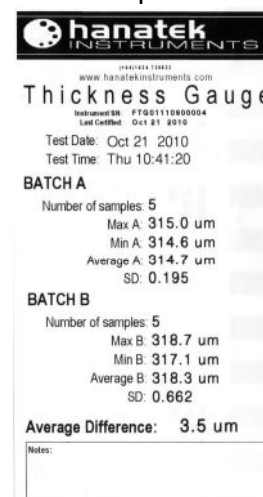


At the end of the test the Stats screen will be shown.



Press the print button to produce a results label, Hanatek results printer is required.

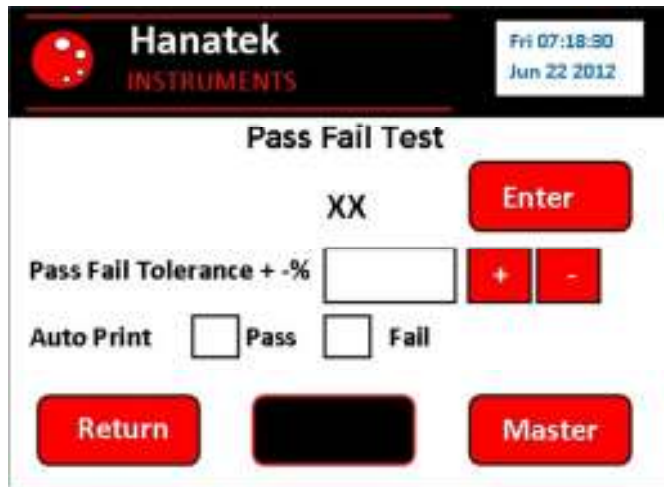
Measurement tip- Results Labels are securely time and date stamped. Sticking labels on to job sheet or retained samples proves the conformity of material throughout the batch run.



Pass Fail

This option allows the user to set a percentage tolerance for the samples under test. A target thickness or measured reference is entered into the test set-up screen before the test commences and readings are taken. PASS or FAIL is displayed at the end of the test to clearly indicate if the samples are within specification along with the statistics for the completed test. An auto results print option is also available.

Set up the test parameters in the options menus, select Pass Fail test method, and then Press TEST.



To change the target thickness, press the Enter Button. An on screen number entry keyboard will be displayed. Enter the target thickness and press OK.

To Measure a master sample and use this thickness as the target press Master. The instrument will run through a measurement routine and then store the average thickness of the sample as the target.

Enter the tolerance of the thickness measurement by pressing the + and – buttons.

The Auto Print feature when selected will automatically print a Pass, Fail or both result labels. At the end of the test there will still be the option to print further result labels if the Auto print is selected or not.

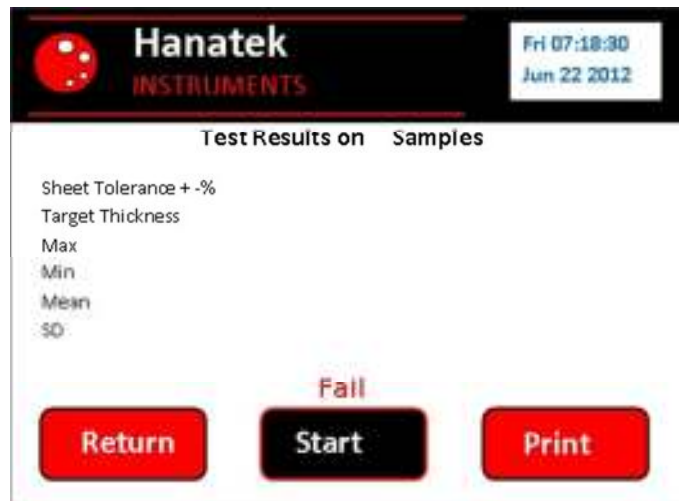
Press the “Start Button” that will appear when the test parameters have been set to begin the test, measurements will now be made of the first sample/s.

When the foot is in the up position the sample can be repositioned (measuring the average thickness of a single sample) or replaced (measuring the average thickness of a sample set).

Press "Pause" to pause the test.

Press "Stop" to terminate the test and display the statistics for the measured values.

If the test is stopped or when the set number of readings have been taken the test result screen will be shown. At this point the auto print label will be printed if this option has been selected.



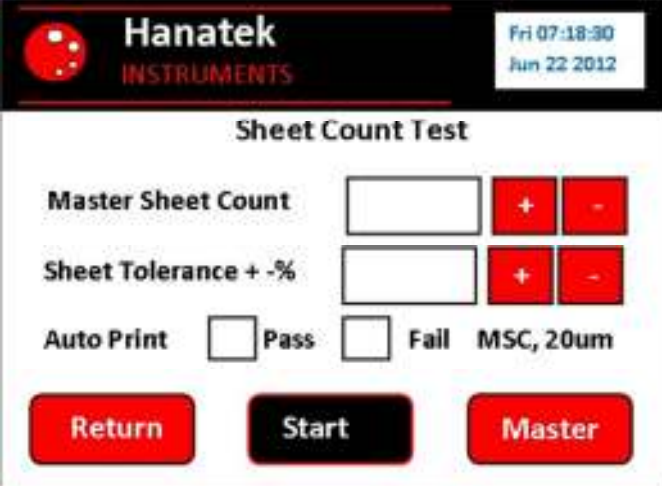
Pressing print will send the test data to the Hanatek label printer producing a time and date stamped test result label.

Return will return back to the main screen, Start will re-run the test under the same conditions.

Sheet Count (option)

This test mode will count sheets or layers of sample as well as showing the total thickness of a stack of samples. A master count of user selectable size is measured as a reference. This value is stored and subsequent measurements will be compared to this master reading

Set up the test parameters in the options menus, select Sheet Count Method and then press TEST.



The screenshot displays the 'Sheet Count Test' interface on a Hanatek instrument. At the top left is the Hanatek logo and 'INSTRUMENTS' text. At the top right, the date and time are shown as 'Fri 07:18:30 Jun 22 2012'. The main title is 'Sheet Count Test'. Below this, there are three input fields: 'Master Sheet Count', 'Sheet Tolerance + -%', and 'Auto Print'. The 'Master Sheet Count' and 'Sheet Tolerance + -%' fields have red '+' and '-' buttons next to them. Below these fields are checkboxes for 'Pass' and 'Fail', and the text 'MSC, 20um'. At the bottom, there are three large buttons: 'Return' (red), 'Start' (black), and 'Master' (red).

Enter the target number of sheets/layers of material to be tested in the master sheet count box by pressing the + and – buttons.

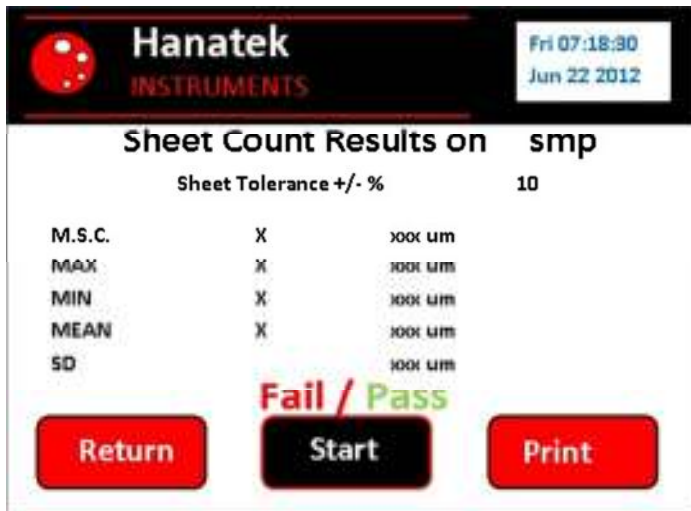
In the Sheet Tolerance box enter the allowable tolerance of a single sheet of material being tested.

Press Master, the instrument will go into reading mode to measure a master stack of material or a calibration artefact. If measuring a stack of woven samples it is recommended that the readings are taken in several places to get a good average. Once the master stack has been measured the average thickness will be stored into the instruments memory.

Press start to commence the test.

Press “Pause” to pause the test.

Press “Stop” to terminate the test and display the statistics for the measured values.

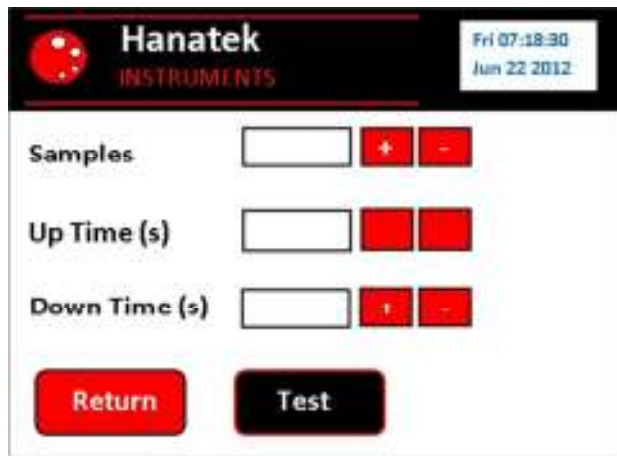


If the test is stopped or when the set number of readings have been taken the test result screen will be shown. At this point the auto print label will be printed if this option has been selected.

Pressing print will send the test data to the Hanatek label printer producing a time and date stamped test result label.

Return will return back to the main screen, Start will re-run the test under the same conditions.

Using the Footswitch (option)



In the second options menu set the up time and the down time to 0.

Pressing the foot switch down will lower the measuring head. Releasing the foot switch will return the measuring head to the up position.

SERVICE

Recommended Service / Calibration interval is yearly

Contact- HANATEK Instruments:

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EU Directive 2002/96/EC on WEEE (Waste Electrical & Electronic Equipment) and RoHS (Restriction of the use of certain Hazardous Substances).

The European Union's Directive on Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (ROHS) defines each of 10 categories of electrical and electronic equipment in Annex I . Category 9 is defined as follows:

9. Monitoring and control instruments
 - Smoke detector
 - Heating regulators
 - Thermostats
 - Measuring, weighing, or adjusting appliances for household or as laboratory equipment
 - Other monitoring and control instruments used in industrial installations (e.g. in control panels).

The RoHS Directive defines the scope of restrictions in Article 2 as follows:

"1. Without prejudice to Article 6, this Directive shall apply to electrical and electronic equipment falling under the categories 1, 2, 3, 4, 5, 6, 7 and 10 set out in Annex IA to Directive No 2002/96/EC (WEEE) and to electric light bulbs, and luminaires in households."

This product is supplied as a Monitoring and Control instrument and as such falls within category 9 of the EU directive 2002/96/EC and so is excluded from restrictions under the scope of the RoHS Directive.

The Waste Electrical and Electronic Equipment Directive is intended to reduce the amount of harmful substances that are added to the environment by the inappropriate disposal of these products through municipal waste.

Some of the materials contained in electrical and electronic products can damage the environment and are potentially hazardous to human health; for this reason the products are marked with the crossed out wheellie bin symbol which indicates that they must not be disposed of via unsorted municipal waste.

Rhopoint Instruments Ltd have arranged a means for our customers to have products that have reached the end of their useful life safely recycled. We encourage all end users to us at the end of the product's life to return their purchase to us for recycling as per Article 9 of the WEEE Directive.

Please contact us on +44 (0) 1424-739622 and we will advise on the process for returning these waste products so we can all contribute to the safe recycling of these materials.