# THSSD Software User Manual

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## **Getting Started**

## **System requirements**

#### Hardware Requirements:

- 1. USB 2.0 communication port.
- 2. CPU: Dual Core 1.6 GHz or higher
- 3. RAM: 2 GB or higher
- 4. 1024x768 screen resolution or higher
- 5. Mouse or touch-pad (notebooks)
- 6. Keyboard

## Software Requirements:

Operating system: Win XP (32-bit version only), Vista, Win 7, Win 8, Win 10

## **USB Communications**

### Hardware requirements:

1. Before you use this software you need to install FTDI drivers for Tensile Tester. You can find driver in programs folder or download from FTDI chip site:

http://www.ftdichip.com/Drivers/D2XX.htm

2. Unpack files from distribution archive. (you can use <u>7-zip</u> or <u>winrar</u> to manipulate archeves)

3. Run .exe file

## **Software Overview**



- 1. Main Menu
- 2. Sub-menu items
- 3. Chart
- 4. Actual force and position
- 5. Maximum force and position
- 6. Chart control panel





X coordinate - Way in mm Y coordinate - Force in Newton

## Note: X and Y units can be changed



### User can also rename axis



Result:



User can zoom specific area by making rectangular selection. Press & hold mouse right button and move cursor to navigate through chart. To zoom out make rectangular selection from right to left. Coordinate values will change according to zoom level.



Hovering mouse over curves will display Way and Force at specific points



Scale chart via pop-up menu

## THSSD software user manual





setting line thickness via pop-up menu. valid range: 0...9 pixel



snapshot via pop-up menu

## **Actual Force and Position**

27-3-2017 10:13:15

Force:	
4.3 N	
Position:	
0.00 m	ım
Statistics	
Max. Loa	d
0	
at	
0	

User can select precision of current force display. User should make right click and from pop-up menu choose the resolution.

Force:		
-32.8 N	•	0.0
Position:		0.00
0.00 mm		0.000
Statistics		0.0000

On the right panel actual Force and Position is shown. Their values change dynamically when the test runs.

To reset their values double click each of them or reset both values from main menu (>0<)

## **Max. Force and Position**

Force:	
-32.8 N	
Position:	
0.00 m	m
Statistics	
Max. Ford	ce
0	
at	
0	

After the test is completed, Max. Force and Position is displayed on the right hand side. If multiple curves are shown, select/hide them as shown on the picture above.

select position source:

Position:	
0.00 mr	n
•	Encoder
Statistic	Extensometer
Max. Force	

## **Manage Curves**



User can manage multiple curves from this area. Previous test results can be imported or actual test results exported. Individual curves can be hidden/deleted/exported etc...

## Status Bar

 Status:
 OFFLINE
 Points:
 463
 Cycle No:
 0%
 Time [s]
 9.25
 Speed:
 19.9
 ...

Status - shows current status of software. See <u>software modes</u>;
Points count - show count of data points in latest test curve;
COM port - shows current communication port;
Cycle No- shows cycle number;
Progress bar - shows progress of current test;
Time [s]: - time interval from start of test;
Speed [mm/min]: - speed of test;

## About window

🔤 About			
Language			
Product Name:	THSSD-2017		
Version:	RC3 1.0.17.119 (03.2017)		
Firmware version:	Z-5.12 04.2014		
Nominal Load of Loadcell:	5000N		
Measuring units:	Metric		
	OK Hardware status		

## About window shows:

- Name of software
- Version of software
- Firmware version (only in ONLINE mode)
- Nominal load of load cell (only in ONLINE mode)
- Measuring units (English/Metric)

## Main Menu

				THSSD-20	017 RC3 x86 b	ouild Nr: 1.0.1	7.119(03.2017	7)	_ <b>□</b> ×
Mac	hine Method	Report							0
Start	Stop	>0<	Return	Up	Down	2	2	¢	Tensile test Force limit:100 N Max. way:15 mm Speed of test:100 mm/min Preload:0 N

From Main Menu user has options to start/stop tests, select testing methods, export reports and diagnose machine.

## Machine



Start - Start the test
Stop - Stop the test
>0<- Reset load cell and position (set both to 0)</li>
Return - Return crosshead to starting position



Up - Move crosshead up Down - Move crosshead down



- 1. Save user settings in \*.ini file
- 2. Restore user settings from \*.ini file



**Options** - Setting user options (automatic crosshead return, curve saving modes, autosave default folder, etc...)

Options		×
Return to start position Automatic return Fast return (400 mm/min)	Vo [mm/min]	300
Saving mode *.set files. Multiple curves *.bin files. Single curve in a *.setx files. Multiple curves	in one file (example.set) one file (example.bin) s in one file (recommended)	
User Settings Show input window before Lock testing settins Show Chat FPS	start 🔲 Open XLSX export file 🔲 Open XLSX report file 🔲 Show Legend	
Autosave Automatic saving Folder: C:\Users\[\Documents		
Auto Export Stats to XLSX	Auto open Stats XLSX File	
Units Metric	English	

## Method



From this section user can select testing method.

## Report

Machine	Method Repo	ort				
Print Chart	*.xisx Report	*.docx Report	Report	Export to Excel	Export to Text	Luser Logo
					G	

From this section user can generate and export reports.

Print Chart - Prints actual chart \*.xlsx Report – generates report based on \*.xlsx template \*.docx Report – generates report based on \*.docx template Report - generates standard based on internal template system. Possible to export in \*.pdf file format

Export to Excel - Exports report to excel file Export to Text - Exports report to text file



User Logo - User can select company logo or custom image (used in standard Report)

## Diagnose

🔤 About		×
Language		
Product Name:	THSSD-2019	
Version:	RC10 1.3.19.029 (03	3.2019)
Firmware version:	Z-5.40a 10	.2018
Nominal Load of Loadcell:	3000N	
Measuring units:	Metric	
Check for software updat	tes	Hardware status
THSSD-2018 software versi Status: [RC9] [Published] New: + MS Word template based + Statistic module update	on:[1.0.18.398] : upd	ate: [08.2018]
	ОК	
Machine status		×
Status signals MANU	AL MODE	signals Limit sw +
RUN		Limit sw -
ni UpDir		Overload
Ref. sv	vitch	Follow. Error
Force r	ieg.	Motor Error
		OT Warning
	L	Reset machine

HW diagnostic section shows current state of machine. If an error occurs during the test - motor error, limit switches, etc, corresponding indicators will be highlighted.

on the right panel user can reset machine, apply/remove compensation and start stiffness compensation tool.

## Language



To change language, click on question mark icon on right hand side and choose your language from menu.

P About	x
Languges	
English	2015 RC10
French (France)	
German (Germany)	7 5 00 00 0014
	2-5.03 02.2014
Nominal Load of Loadcell:	3000N
Measuring units:	Metric
	ок

## **Testing Methods**

There are 7 different testing methods implemented in software:

- Tensile test
- Compression test
- Hysteresis
- Force regulation
- Friction test
- Peeling test
- 3-point Bending test

User can select testing methods from main menu under the <u>'Method'</u> tab. When user selects method, method settings and parameters will be shown next to the 'Chart' tab:

Chart	rt Tensile Test		
Setting	s Sample description		

## **Tensile test**

Settings	Sample description		
Mach Spe	iine ed (mm/min) D	Chart Y-axis: Load [N]	Project Part Number: PART
Disp 15 May	placement (mm)	X-axis: Displacement [mm]   ▼	Order No: Order N Method:
10 Prel	oad [N]	Elastic modulus Scan limit X1 [%]:	Tension test Tester: Owner Customer:
Bre-	aking Force [N] Read Breaking Force	Scan limit X2 [%]:	Note Notes:
	Update	Extensometer     Set Scan Limits	

#### Parameter description:

## Machine Settings:

- Speed [mm/min] Machine speed during the test.
- Displacement [mm] Maximal travel distance. When maximal distance is reached, test is stopped.
- Maximal Load FI [N] Maximal load during test. When maximal load is reached, test is stopped.
- Preload [N] Software starts chart plotting, when this value is reached. Default value is 0.
- Breaking Force (dF) [N] Allowed force to be dropped during the test. if force dropping is more than given value, machine detects braking and test is finished.

Note: Before starting the test, user should click on 'Update' to send given values to machine.

### **Chart Settings:**

User can set left and bottom axis units.

#### Elastic modulus:

Set scan limits in [%] Select Extensometer data for usage in E-modulus calculation. Click on 'Set scan limits' These limits will be used for multiple E-modulus calculation.

### Project Settings:

Additional project information.

Se	ettings Sa	mple descriptio	n
	Dimensions		
	Parameter	Value	
	LO, mm	100	
	W, mm	50 😼	
	T, mm	T, mm 3	
	Material	Plastic	
	Area	150	

In 'Sample description' tab, user will enter sample data: width, thickness, length, cross-section, material, shape, etc...

## **E-modulus Calculation**

Right click on curve name -> 'Elastic / Flexural modulus' .





## **Compression Test**

### Parameter description:

#### Machine Settings:

- Speed [mm/min] Machine speed during the test.
- Displacement [mm] Maximal travel distance. When maximal distance is reached, test is stopped.
- Maximal Load [N] Maximal load during test. When maximal load is reached, test is stopped.
- Preload [N] Software starts chart plotting, when this value is reached. Default value is 0.
- Breaking Force [N] Allowed force to be dropped during the test. if force dropping is more than given value, machine detects braking and test is finished.

Note: Before starting the test, user should click on 'Update' to send given values to machine.

#### **Chart Settings:**

User can set left and bottom axis units.

#### **Project Settings:**

Additional project information.

Chart Compression Test		
Settings Sample Description		
Machine Speed [mm/min] 100 Displacement [mm] 15.225 Maximal Load [N] 100 Preload [N] 0.25 Breaking Force [N] 10 Read Breaking Force Update	Chart Y-axis: ✓ invert Load [N] X-axis: ✓ invert Displacement [mm]	Project Part Number: Part No Order No: Order Nr Method: Method Tester: Owner Customer: Remark

In 'Sample description' tab, user will enter sample data: width, thickness, length, cross-section, material, shape, etc...

## Hysteresis

Maahina	Chart	Project
		Project Part Number:
Speed (mm/min)	Y-axis:	Part No
100	Invert	
Displacement [mm]	Load [N]	Order No:
15	X-avis:	Order Nr
		Method:
Maximal Load [N]		Method
100	Displacement [mm]	▼ Tester:
Preload [N]		Owner
0	Options	Customer:
Fhys [N]		Remark
0		2 <sup>3</sup>
Cycles count	-	
0		
Holding Time [sec]	-	
0	1	

### Parameter description:

### **Machine Settings:**

- Speed [mm/min] Machine speed during the test.
- Displacement [mm] Maximal travel distance. When maximal distance is reached, test is stopped.
- Maximal Load [N] Maximal force during test. When maximal force is reached, test is stopped.
- Preloading [N] Software starts chart plotting, when this value is reached. Default value is 0.
- Fhys [N] hystesis mode limited by given force. Fhys should be less then Max. Load [N].
- Cycles count Number of test iterations.
- Holding Time [sec] Time interval machine holds, when max. distance is reached.

Note: Before starting the test, user should click on 'Update' to send given values to machine.

### **Chart Settings:**

User can set left and bottom axis units.

### **Project Settings:**

Additional project information.

Settings S	ample Descript	ion
Dimensions		
Parameter	Value	
LO, mm	100	
W, mm	50	
T, mm	3	
Material	Plastic	Y 2
Area	150	

In 'Sample description' tab, user will enter sample data: width, thickness, length, cross-section, material, shape, etc...

## Force Regulation

Chart Constant force Settings Sample Description Machine Load [N] 100 Displacement [mm] 10 Holding Time [Sec] (max 604800) 1	Chart Y-axis: ✓ invert Load [N] X-axis: ✓ invert Time [sec] ✓	Project Part Number: Part No Order No: Order # Method: Tension test Tester: Owner
Compression Soft Hardness: 5 1 2 3 4 5 6 7 8 9 10 Update		Customer: Note

### **Parameter Description:**

#### **Machine Settings:**

- Load [N] When regulation force is reached, machine keeps force for specified time interval.
- Displacement [mm] Maximal distance machine will travel.
- Holding Time [sec] Time interval machine holds, when regulated force is reached.

Note: Before starting the test, user should click on 'Update' to send given values to machine.

#### **Chart Settings:**

User can set left and bottom axis units.

#### **Project Settings:**

Additional project information.

In 'Sample description' tab, user will enter sample data: width, thickness, length, cross-section, material, shape, etc...



## **Friction Test**

Settings	Sample description		
Machin Spee 100 Displ 15 Maxii 100 Prelo 0 Breal 10 Re	ne ed [mm/min] lacement [mm] imal Load [N] bad [N] bad [N] ead Breaking Force	Chart Y-axis: Load [N] X-axis: Displacement [mm]	Project Part Number: Sample Order No: Order N Method: DIN 53 375 Tester: Owner Customer:

### Parameter description:

### Machine Settings:

- Speed [mm/min] Machine speed during the test.
- Displacement [mm] Maximal travel distance. When maximal distance is reached, test is stopped.
- Maximal Load FI [N] Maximal load during test. When maximal load is reached, test is stopped.
- Preload [N] Software starts chart plotting, when this value is reached. Default value is 0.
- Breaking Force [N] Allowed force to be dropped during the test. if force dropping is more than given value, machine stops and test is finished.
- Note: Before starting the test, user should click on 'Update' to send given values to machine.

## **Chart Settings:**

User can set left and bottom axis units.

### **Project Settings:**

Additional project information.



In 'Sample description' tab, user will enter sample data: Nominal load, length, width, sledge weight, etc...

## **Software special functions**

## Software modes

In software exist 3 modes:

- **OFFLINE mode-** in this mode you can work without machine. Also this mode automatically activates, when software suddenly loses connection with machine.
- **ONLINE mode** this mode is used for setting up machine and preparing for test.
- **RUNNING mode-** this mode automatically activates when machine starts test.

## **OFFLINE** mode

We use this mode, when software loses connection with machine, or you want use program without machine (for example: user wants analyze test results in different office, where ZPM machines not present).

In this mode you can load saved curves, make reports etc.

### ONLINE mode

In this mode, software is connected with machine and ready to transmit data to machine and receive data back from the machine.

You can control machine, prepare for test etc...

### **RUNNING mode**

In this mode software is connected with machine and receives test data from machine. In this mode machine controls buttons locked, expect "Stop" button. Chart control tool is locked too.

## **Automatic reconnect**

When connection with machine is lost, software automatically tries to reconnect. If within 10 attempts communication is not restored, software automatically switches to OFFLINE mode.

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