



Specialloy Digital Chart Recorder

User Manual

Specialloy Instrumentation

Houston, Texas, USA

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Chapter One: Overview

1. Introduction

Specialloy Instrumentation's Digital Chart Recorder is specially designed to collect real-time data of pressure and temperature units under test. The Specialloy Digital Chart Recorder (SDCR) is complete with ESI Pressure Transducer with Temperature for compensation, a Windows 10 Tablet, and ESI Software for Pressure & Temperature Recording. The SDCR components are assembled into a rugged pelicanized case for light-weight mobility.

The features of the SDCR:

- Graphical interface displaying real-time pressure & temperature
- Supports multiple instruments under test – up to 16 in a single test
- Data Exporting & Report Writing

2. System Components

- a. Rugged Pelicanized Mobile Case
- b. Windows Tablet
- c. ¼" NPT or ¼" HPF Bulkhead with mounted ESI Pressure Transducer(s)
- d. ESI Reporting Software
- e. 2x USB Ports
- f. AC 110V Power Plug (M)

3. System Setup

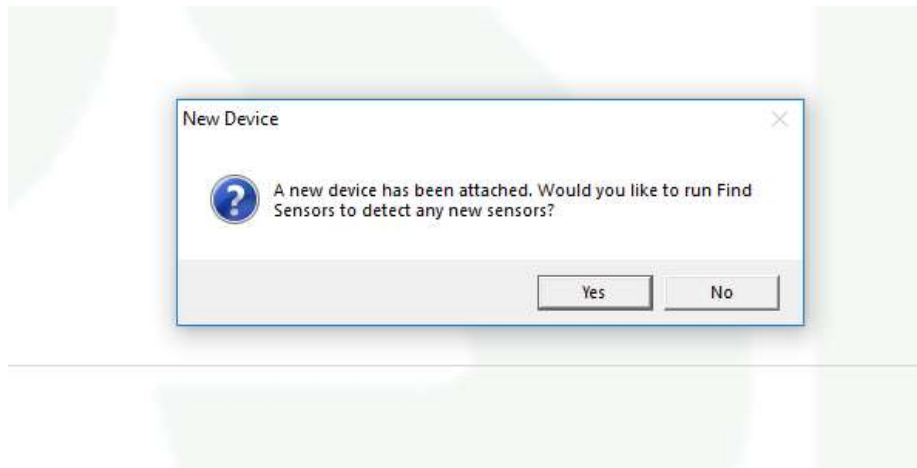
First, Turn On the Windows Tablet and Login to Windows Account:



Next, double-click to open the ESI-USB Software Application



If no sensors are plugged into the USB Port, and the ESI Software does not recognize a USB sensor. Make sure the Sensor is plugged in and select YES to search for newly attached sensors:



Once a sensor has been detected, your ESI Software screen will display the MONITOR View:

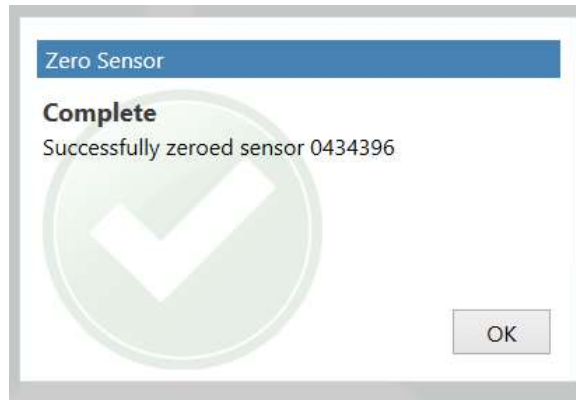
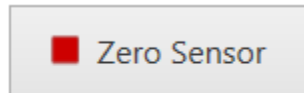


Prior to beginning a Test, make sure to set the appropriate intervals and formats for the testing:

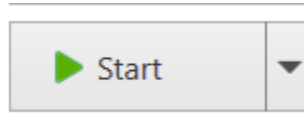


4. Starting a Test

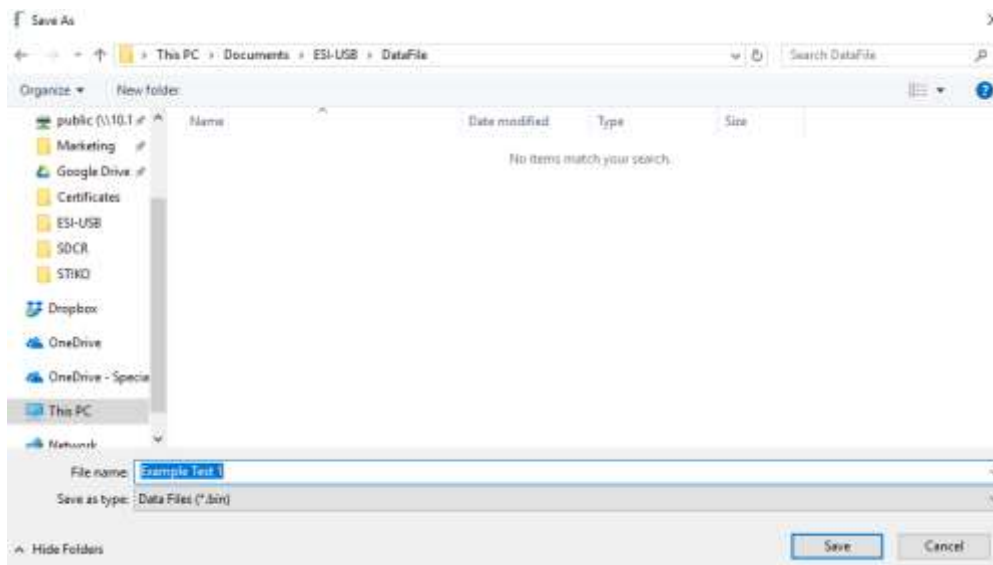
When ready to start a test, make sure to ZERO your sensor:



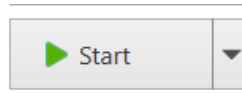
To begin Recording, press Start:



If Data Logging Feature is enabled, the ESI Software will require user to save the datafile prior to recording:



By clicking the Down Arrow on the Start Button, the ESI Software will allow you to adjust Start & Stop Times according to your desired Test:



Scheduled Measurement

Start measurement

Immediate

At 07/Jun/2018 15:32:38

In 10 Minutes

Stop measurement

Manual

At 07/Jun/2018 15:32:38

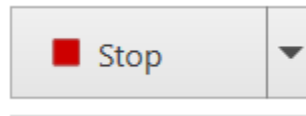
After 10 Minutes

OK Cancel

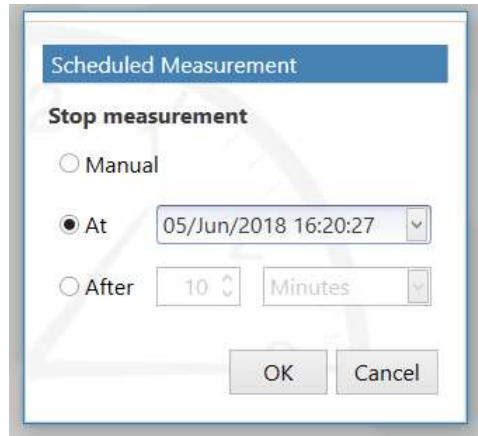
Once recording, Click on the Graph View to display the Chart Recording:



Once Pressure Recording has completed, Press Stop button:



Or, to set a specific Stop Interval, select the Drop Down Arrow on the Stop Button:

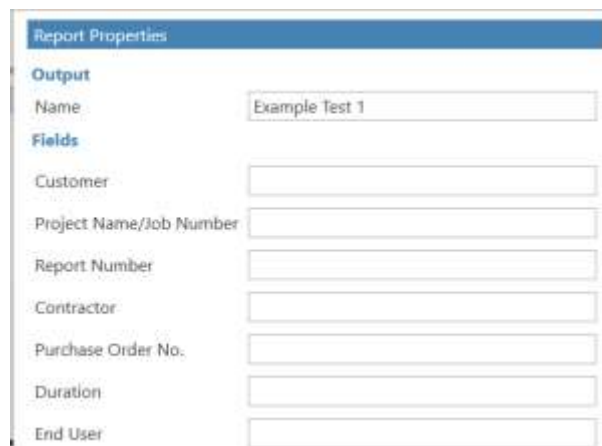


5. Generating a Report

Under Reporting Section, Press the Generate Button to Start a Report:



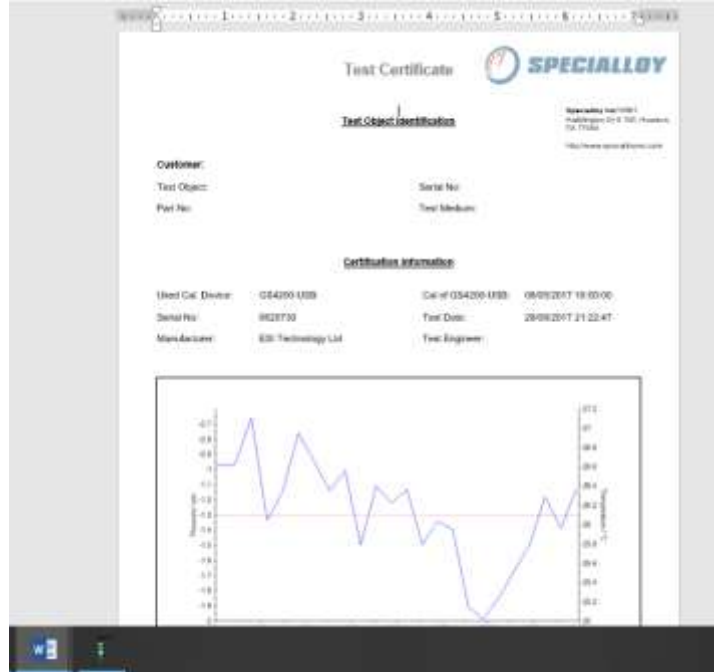
Fill in the Custom Fields to Generate the Test Report:



Press OK to Generate the Test Report – This might take 20-30 seconds, depending on the size of the datafile.



A Test Report will generate after several seconds; it will Open in Microsoft Word:



Chapter Two: Software Views

1. View Overview

Upon opening the ESI-USB Software, the main Dashboard view will be shown in Monitor View.



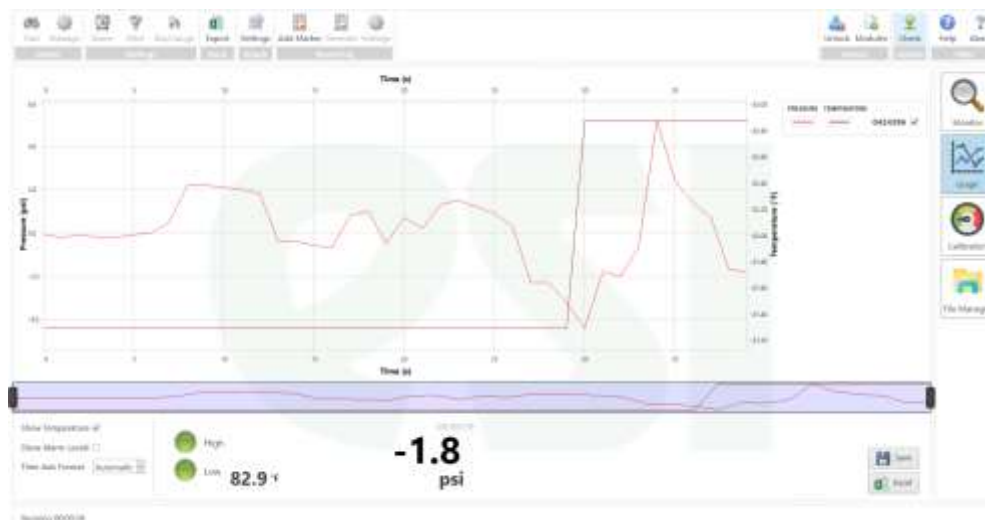
2. Monitor View

Monitor View is the ESI Software main Dashboard view. From the Monitor View, the user can see:

- Pressure Reading
- Temperature Reading
- Elapsed Test Time
- High & Low Alarms (Visual)
- Sensor Start/Stop & Zero Buttons
- Pressure & Temperature Unit/Format/Interval Settings

3. Graph View

Graph View is the ESI Software Chart View. The user is able to easily see trending Pressure & Temperature readings, as well as toggling ON/OFF Temperature Readings & Alarm Limits



Chapter Three: Software Features

1. Sensor Settings

At the top left of the ESI Software, you can manage up to 16 Sensors plugged into the system.



a. FIND:

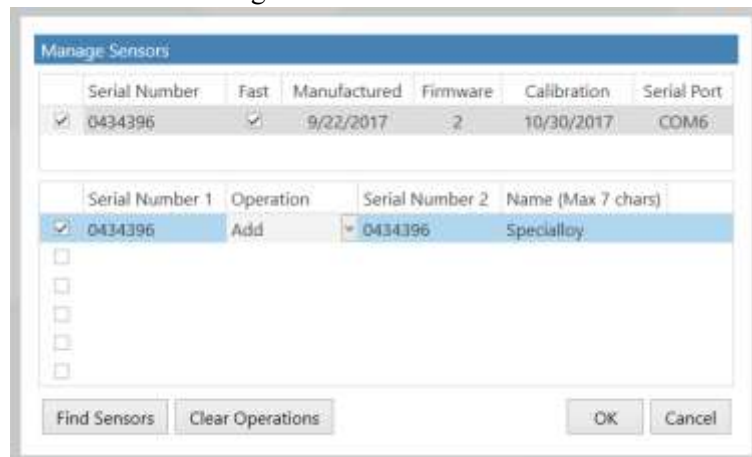
FIND button will query the Software to search and Detect any ESI-USB Sensors that have been plugged in to a USB Port.

b. MANAGE:

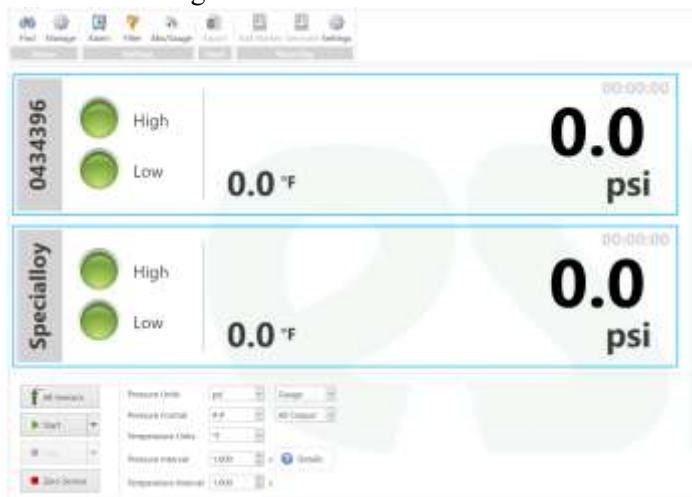
MANAGE button will display all active Sensors and their configuration. From this view, up to 16 different Sensors can be managed – Toggled On/Off, and add special display configurations.

i. Sensor Settings: Display Configuration

From this view, up to 16 different Sensors can be managed with different configurations, especially Differential Pressure settings:

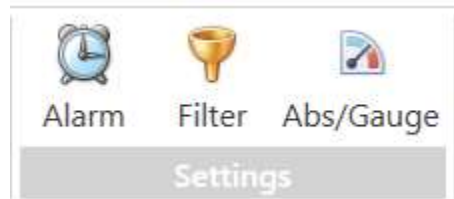


Press OK to implement these configurations.



2. Software Settings

Under the Software Settings section, you are able to manage Alarms, Filters, and Pressure Reading.



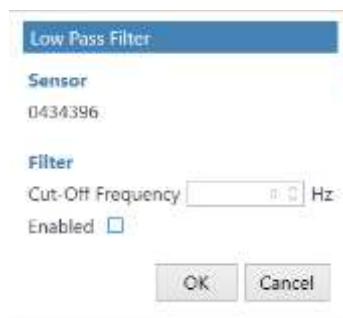
a. ALARM:

Manage High Pressure & Low Pressure Alarms for each sensor plugged in. The Alarm Levels will be shown on the CHART Display.



b. FILTER:

Low Pass Filter passes signals with a frequency lower than a certain cutoff frequency and attenuates signals with frequencies higher than the cutoff frequency.



c. ABSOLUTE/GAUGE:

Absolute/Gauge settings displays the Absolute Pressure corresponding to Gauge Pressure.



d. LEAK TEST:

The **LEAK TEST** feature allows users to set an allowable percentage drop in pressure over a determined period of time.

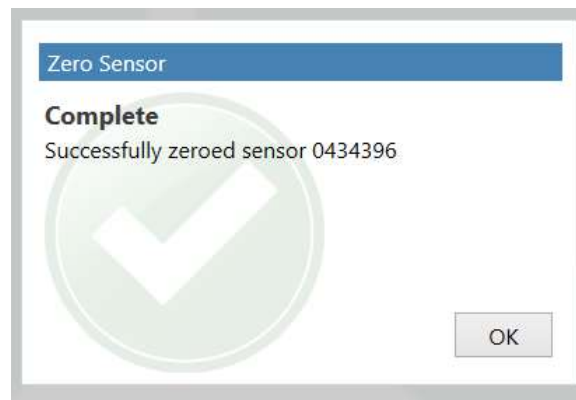
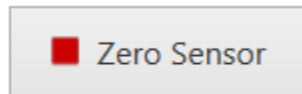


Press the **SETTINGS** button to pre-set the **TIME** length of your test and the allowable **PRESSURE DROP** Percentage.

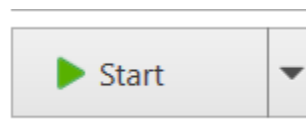


Determine the test's allowable **PRESSURE DROP** Percentage and the **TIME** length of your test. Press **OK**.

When ready to start a test, make sure to **ZERO** your sensor:



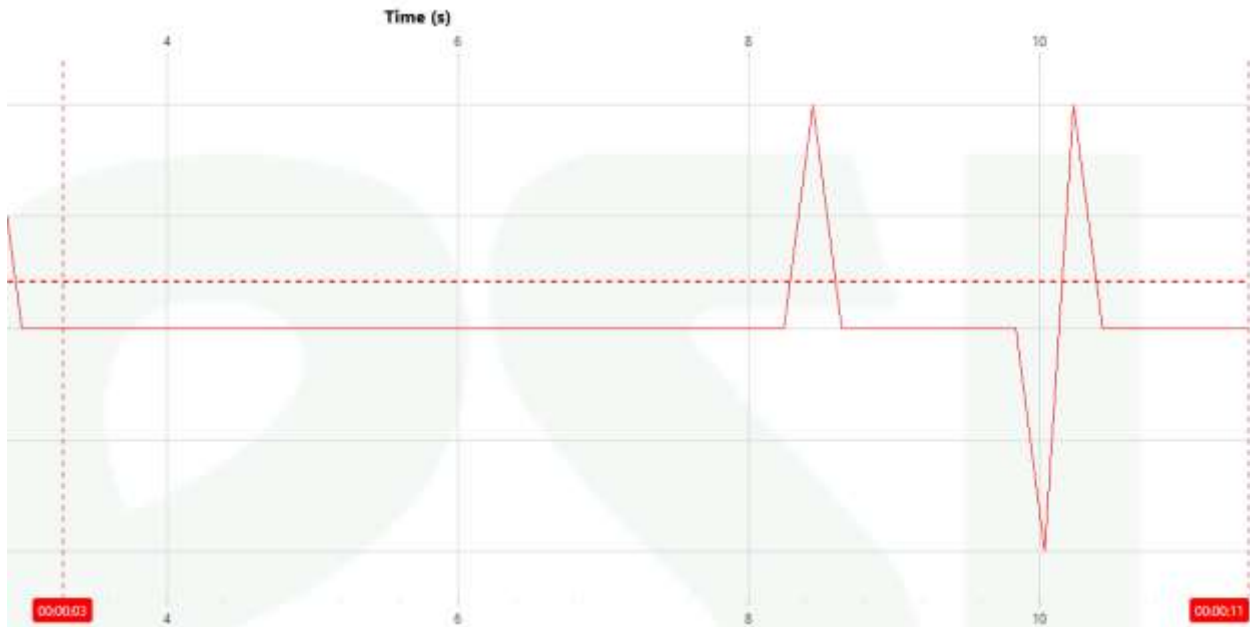
To begin the Test, press Start:



Once you have reached the Pressure to Start the Test, press **START**.




Once you have reached the Pressure to Start the Test, press START. Over the period of the Test, the software will calculate the Percentage Drop – from the START Time (the Time when you pressed the START Button) – to either the Pre-set Period of time, or if the user presses the STOP Button.





The software will automatically provide calculated results.

Leak Test Results	
Sensor	0434381
Starting Pressure	0.0 psi
Final Pressure	0.0 psi
Percentage Drop	-94.10 %
Tolerance	2.00 %
Result	N/A
<input type="button" value="Close"/>	

If the user presses the CLOSE button, you can recall the Leak Test Results by pressing the SHOW button.


Settings


Start


Show

Leak Test

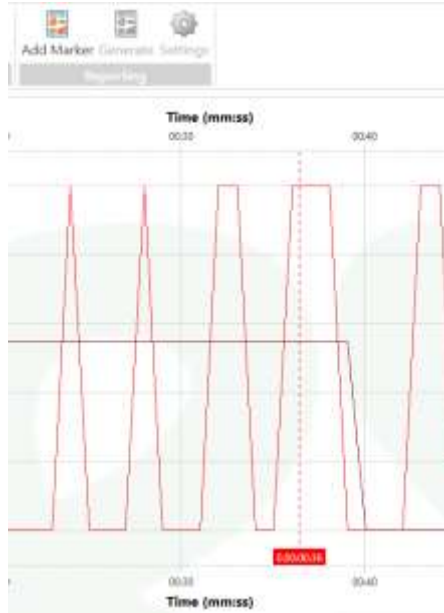
3. Reporting Settings

Reporting Section includes a Timestamp button, a Report Settings button, and Report Generate Button:



a. ADD MARKER:

While Under Test, Press the Add Marker button to insert a Timestamp on the Chart:



b. SETTINGS:

Report Settings displays Test Report Configurations:

Report Settings

Fields

	Name
1	Customer
2	Project Name/Job...
3	Report Number
4	Contractor
5	Purchase Order No.
6	Duration

Word Template: ...

Marker Type: ▾

Output Format: ▾

Output Folder: ...

i. FIELDS:

Up to 100 Customizable Fields may be used within your Report Template. This Fields section allows for easy customization

Fields

	Name
1	Customer
2	Project Name/Job...
3	Report Number
4	Contractor
5	Purchase Order No.
6	Duration

****Note:** Any changes made here must also be duplicated on the Microsoft Word Template file directly with corresponding software instruction code. *Ask Specialloy for additional details

ii. WORD TEMPLATE:

Choose the directory destination filename of the Microsoft Word Template selected to Generate Test Reports:

Word Template ...

iii. REPORT OUTPUT:

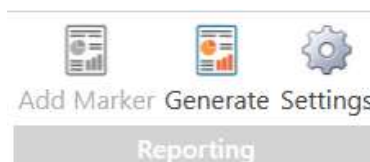
Choose the directory destination filename of the Microsoft Word Template selected to Generate Test Reports:

Output Format ▾

Output Folder ...

c. GENERATE:

Under Reporting Section, Press the Generate Button to Start a Report:



Fill in the Custom Fields that were set up from **Section 3.b.i**

Report Properties

Output

Name:

Fields

Customer:

Test Object:

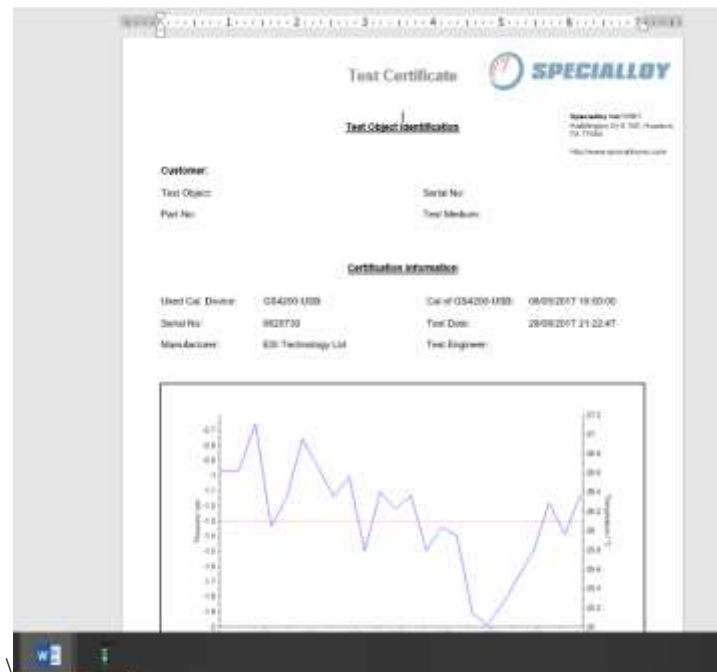
Part No.:

Serial No.:

Test Fluid:

Technician:

Press OK to Generate a Report – this will take 20-30 seconds or slightly longer, depending on the amount of data collective over the length of time.



Chapter Four: Test Report

1. Overview

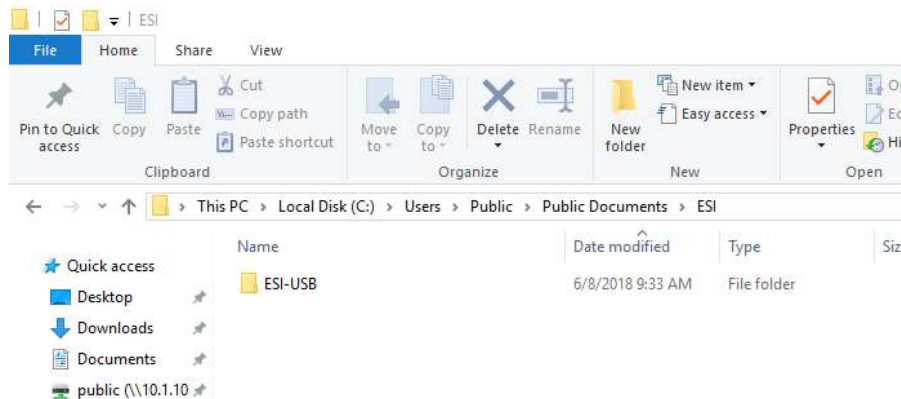
The ESI Software reads the ESI-USB Pressure Sensor while utilizing the Windows Operating System to display and store live pressure and temperature data. Additionally, the ESI Software utilizes Microsoft Word to Generate Test Reports. These Test Reports can be in the desired format within a Microsoft Word Template File. The ESI Software will create a new Test Report within a Microsoft Word Document by organizing actual Test Data onto a pre-formatted Template File.

2. Test Report Template

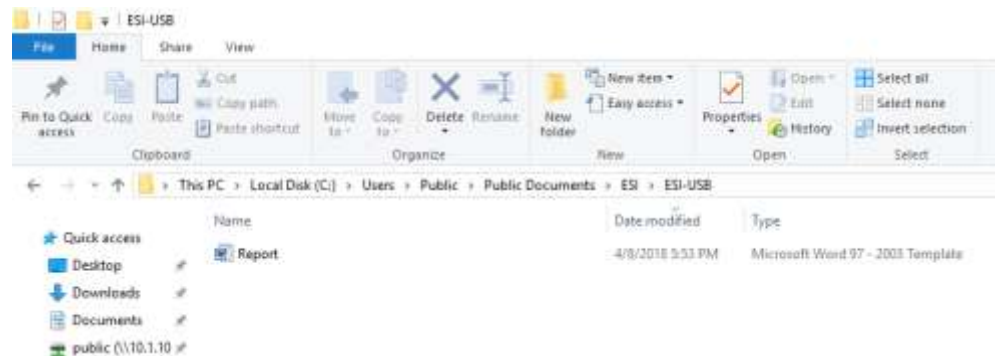
Upon installation, The ESI Software includes a standard Test Report Template within the directory files. Referring to **Chapter 3.b.ii** to select the Template File before generating a report, this section will show how to modify a Test Report Template.

a. Identify the Test Report Template:

Within Windows Explorer, Identify the ESI-USB File Folder Destination. Open the ESI-USB Folder



Identify the Microsoft Word Template file within the ESI-USB Folder. Open the Template File:



Once the Microsoft Word Template File has been opened, the user is able to modify the format and layout of the template.



b. Modifying a Test Report Template:

i. Section 1 - Test Object Identification

Referring to **Chapter 3.3.b.i** in the Customizable fields of Report Settingd, if any custom fields were modified in this section, the user must insert the corresponding code for this custom field number. Up to 99 Custom Fields can be created and inserted onto the Test Report Template. If the user adds an additional Custom Field (as in Chapter 3.3.b.i), the corresponding Code should be inserted by the user onto the Microsoft Word Template.

For example, below Figure 1 shows Custom Field #1 – “**Customer**”. The corresponding Code is then inserted onto the Microsoft Word Template, shown in Figure 2 as: “Customer: **INSERT_CustomField_1**”

Fields	
	Name
1	Customer
2	Project Name/Job...
3	Report Number
4	Contractor
5	Purchase Order No.
6	Duration

Above Figure 1 Referring to Chapter 3.3.b.i

Customer: **INSERT_CustomField_1**

Test Object: INSERT_CustomField_2 Serial No: INSERT_CustomField_4

Part No: INSERT_CustomField_3 Test Medium: INSERT_CustomField_5

Above Figure 2 Referring to corresponding Custom Fields within the Template File

ii. Section 2 – Test Sensor Identification Information

The Available Codes available to be utilized from the standard software are included below:

Certification Information

Used Cal. Device:	GS4200-USB	Cal of GS4200-USB:	INSERT_Sensor1_Calibration
Serial No:	INSERT_Sensor1_Serial	Test Date:	INSERT_StartTime
Manufacturer:	ESI Technology Ltd	Test Engineer:	INSERT_CustomField_6

Sensor Serial Number: INSERT_Sensor1_Serial

Sensor Calibration Date: INSERT_Sensor1_Calibration

Test Date: INSERT_StartTime

NOTE: If multiple sensors will be used within the Test Report, the User will need to add additional code for each additional sensor utilized. For example, an additional Sensor will need “INSERT_Sensor2_Serial” and corresponding “INSERT_Sensor2_Calibration” as well as for each additional sensor added.

iii. Section 3 – Chart Graph

The Available Codes available to be utilized for the Chart Graph as included below:

```
INSERT_Graph
TimeUnits=Minutes
ShowTemperature=True
```

Temperature serves as indication only

Graph Insert Command: INSERT_Graph

Units (Time): TimeUnits=Minutes or Hours

Show Temperature Results: ShowTemperature=True or False

iv. Section 4 – Test Data Table

The Available Codes available to be utilized for the Test Data Table as included below:

Test Data Chart

INSERT_DataTable
TimeUnits=Minutes

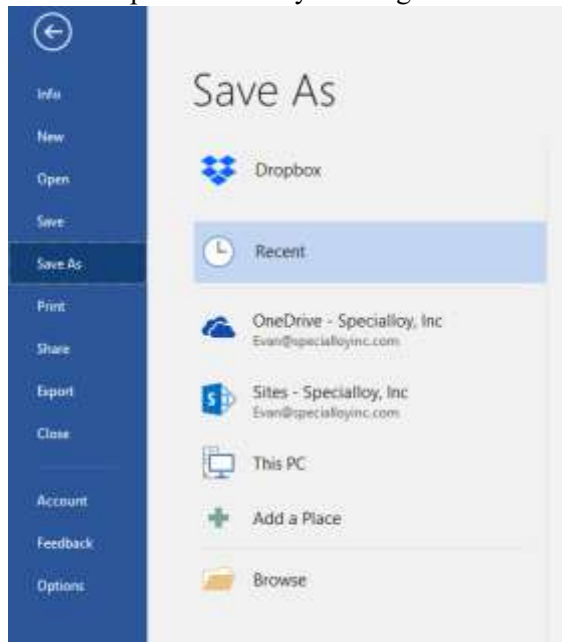
Tablet Insert Command: INSERT_DataTable

Units (Time): TimeUnits=Minutes or Hours

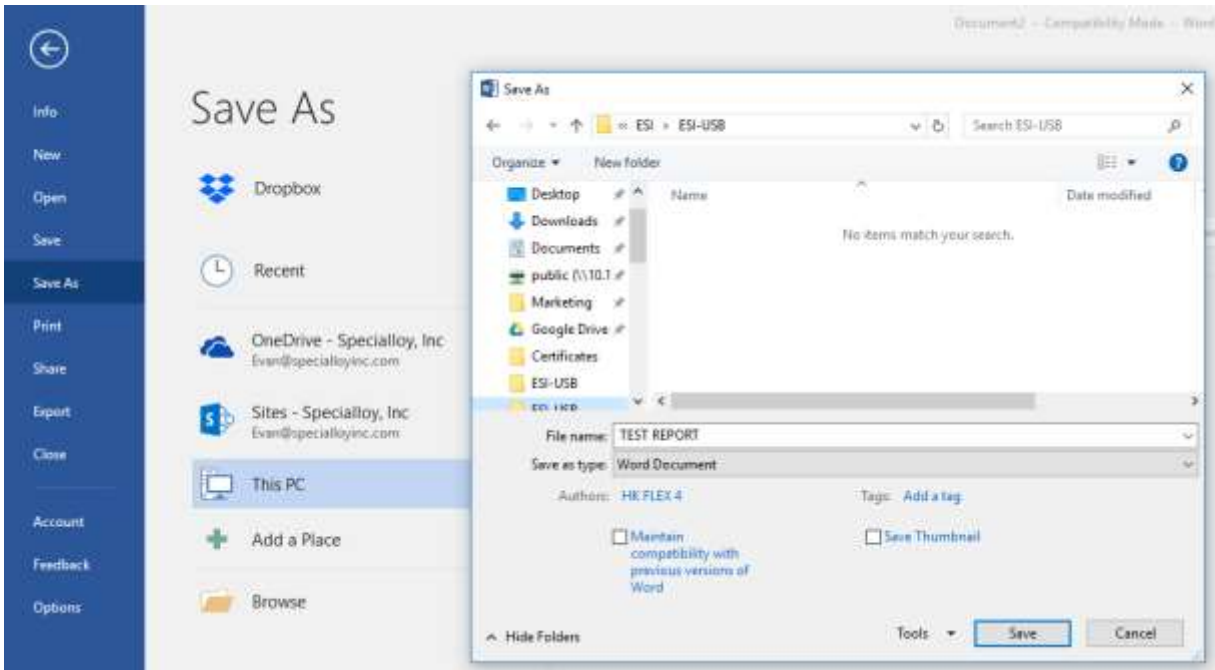
c. Saving a Test Report Template:

When the user has finished modifying and customizing a Test Report Template, the file must be saved in a Microsoft Word Template format.

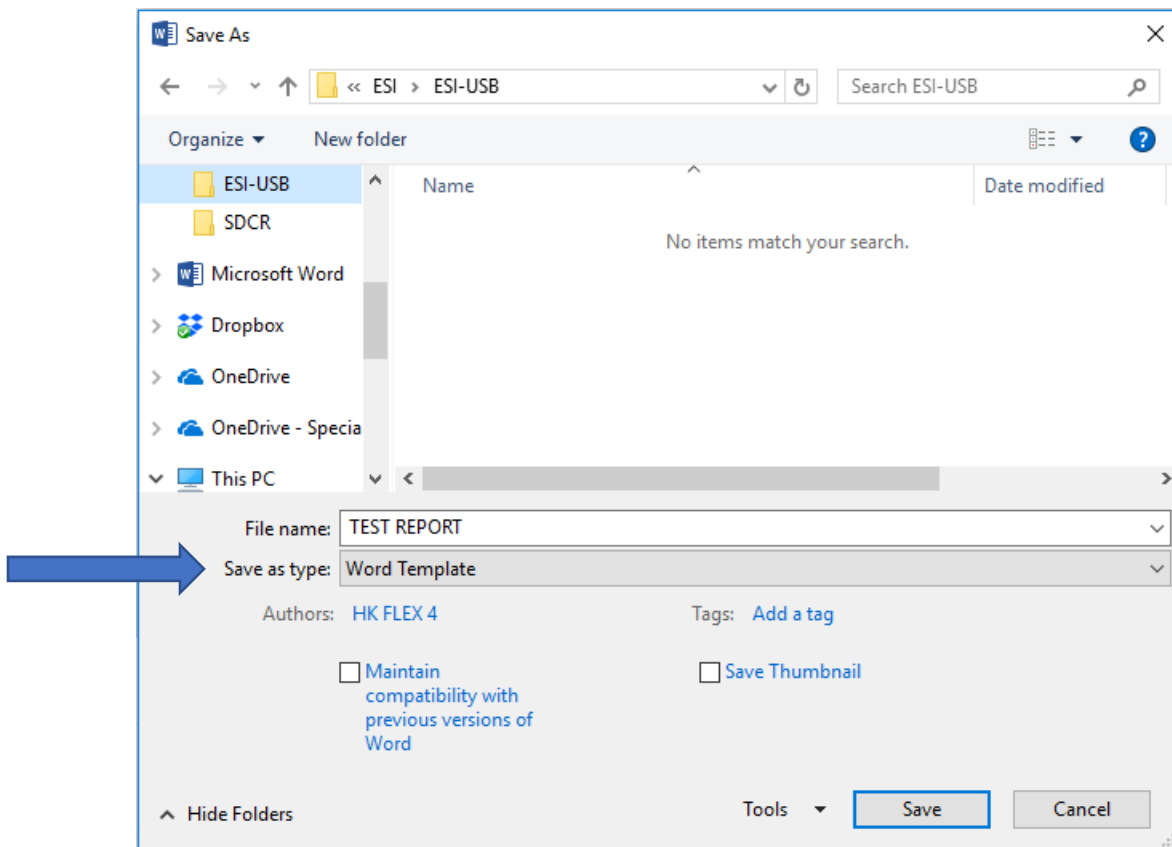
Save as a Microsoft Word Template format by clicking FILE>SAVE AS



Double Click the Save As destination to “This PC” and best to save directly into the ESI-USB File Folder:



Choose “Word Template” as the file format within “Save As Type”



Referring back to **Chapter 3.3.b.ii**, make sure to set the Report Generating Settings to identify the correct Microsoft Word Template that has been newly saved.

Word Template C:\Users\Public\Documents\ESI\ESI-USB\Report - Specia ...