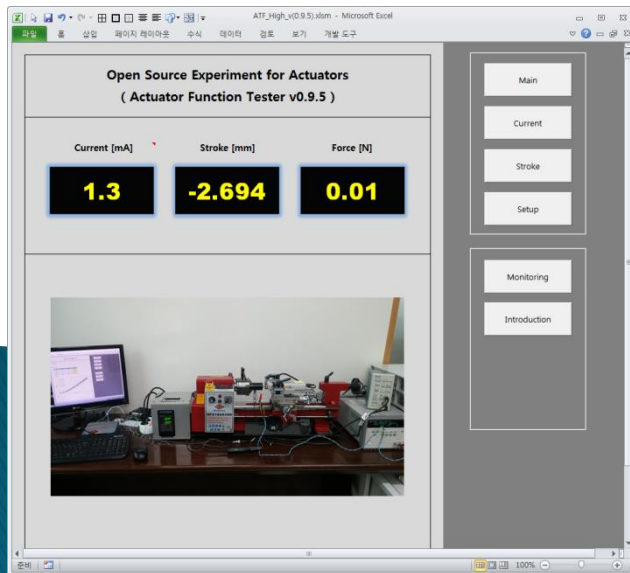


How to use AFT

(Actuator Function Tester)

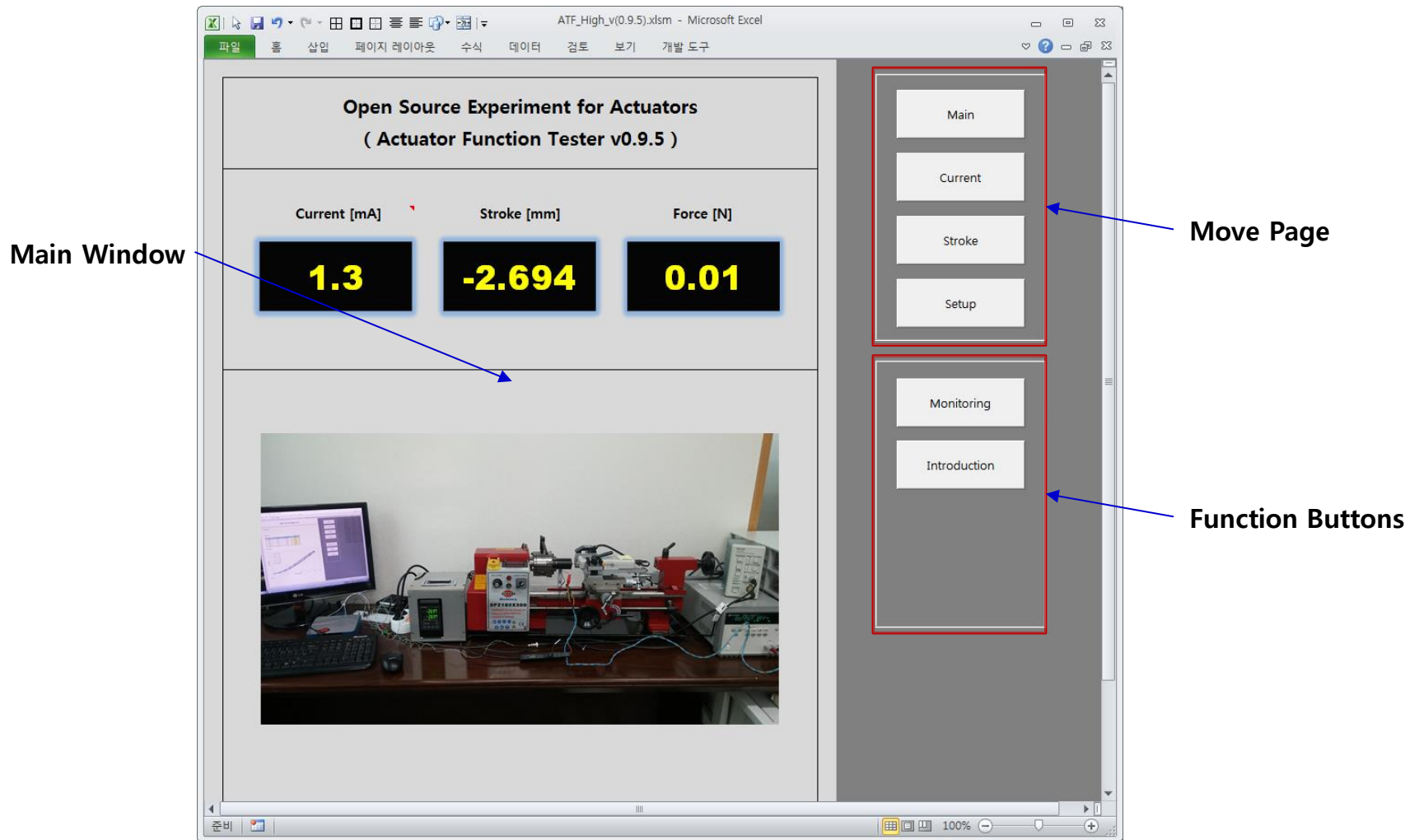
2018-04-22

GiTae Kweon (zgitaе@gmail.com)



ATF Structure

Program Structure



Pages

➤ Main Page

- Real time current, stoke and force data



➤ Settings Page

- Correction of physical values and setting hardware and measurement condition

1. Hardware Setting

DAQ Name : UNO, StepMotor, Load
P/S Name : UNO, Voltage Followe

DAQ Dev / Port Number : 3
P/S Serial Port Number : 3

Check

2. Compensation Setting

A. Current [mA]

Current	Level
0	0.08
13	87.76
26	188.96
38	282.46
51	382.84
64	483
77	582.84
89	673.24
102	771.9
115	869.84

Get Data

B. Stroke [mm]

Stroke	Level
0	0
0.245	100
0.49	200
0.735	300
0.98	400
1.225	500
1.47	600
1.715	700
1.96	800
2.205	900

Get Data

C. Force [N]

Force	Level
0	0
0.01	8.4
0.02	16.8
0.03	25.2
0.04	33.6
0.05	42
0.06	50.4
0.07	58.8
0.08	67.2
0.09	75.6

Get Data

Slope 0.1311 Slope 0.0025 Slope 0.0012
Intercept 0.8257 Intercept 0.0000 Intercept 0.0000

3. Measurement Setting

Sampling Period : 50 ms
Moving average Count : 5
Limit Force : 0.1 N

Actuator Resistance : 33 Ω
Max Current : 90.9 mA
Max Voltage : 3 V

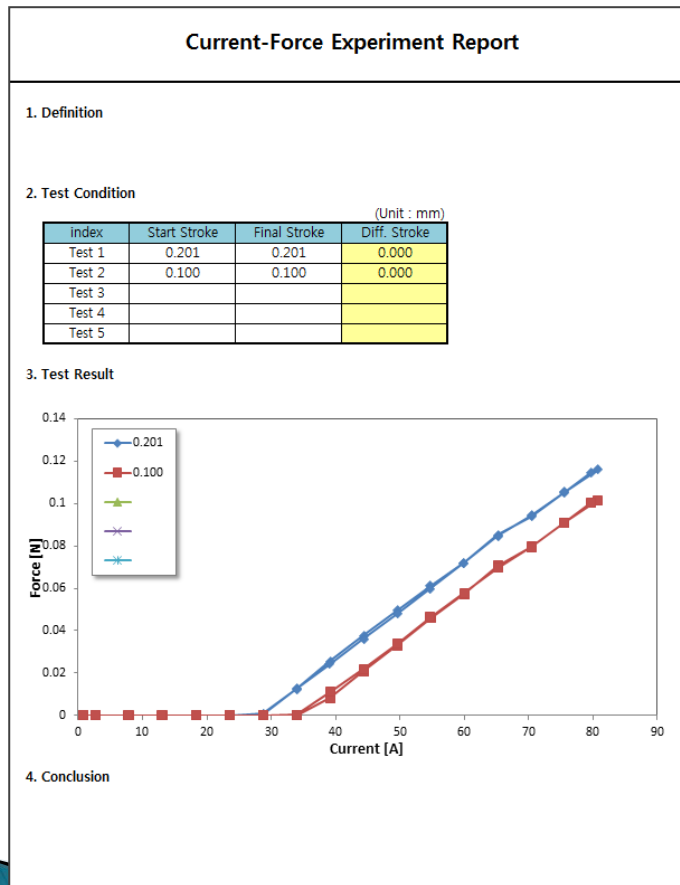
Initial Current : 0 mA
Final Current : 80 mA
Current Step Count : 16

Initial Stroke : 0 mm
Final Stroke : 0.2 mm
Stroke Step Count : 8

Main Window

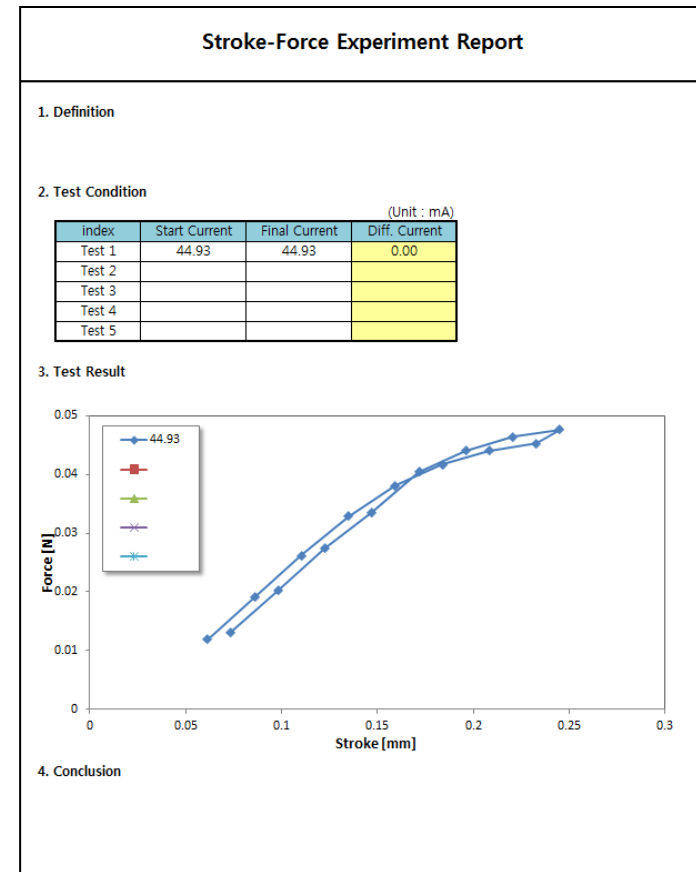
➤ Current Page

- Test of Current-Magnetic force



➤ Stroke Page

- Test of Stroke-Magnetic Force



User Guide

Program Setting

➤ AFT Condition Setting

1. Refer the AFT Installation Manual

1. Hardware Setting

DAQ Name : UNO, StepMotor, Load

DAQ Dev / Port Number : 3

Check

P/S Name : UNO, Voltage Followe

P/S Serial Port Number : 3

Check

2. Compensation Setting

A. Current [mA]

Current	Level
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13	87.76
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38	282.46
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64	483
77	582.84
89	673.24
102	771.9
115	869.84

Get Data

Slope 0.1311

Intercept 0.8257

B. Stroke [mm]

Stroke	Level
0	0
0.245	100
0.49	200
0.735	300
0.98	400
1.225	500
1.47	600
1.715	700
1.96	800
2.205	900

Get Data

Slope 0.0025

Intercept 0.0000

C. Force [N]

Force	Level
0	0
0.01	8.4
0.02	16.8
0.03	25.2
0.04	33.6
0.05	42
0.06	50.4
0.07	58.8
0.08	67.2
0.09	75.6

Get Data

Slope 0.0012

Intercept 0.0000

3. Measurement Setting

Sampling Period : 50 ms

Moving average Count : 5

Limit Force : 0.1 N

Actuator Resistance : 33 Ω

Max Current : 90.9 mA

Max Voltage : 3 V

Initial Current : 0 mA

Final Current : 80 mA

Current Step Count : 16

Initial Stroke : 0 mm

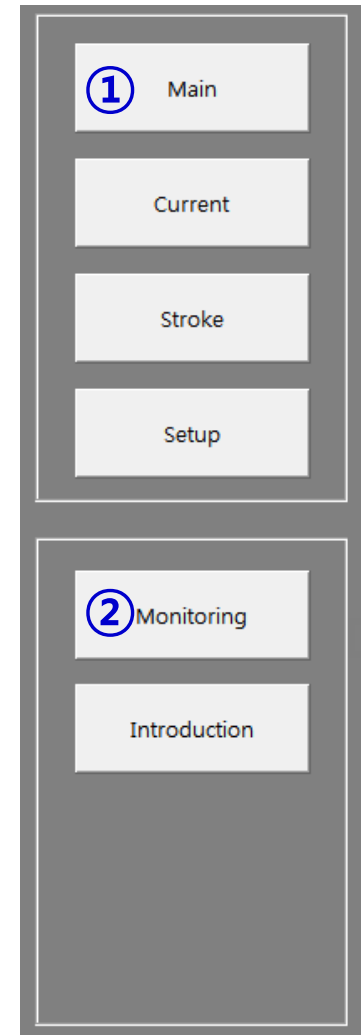
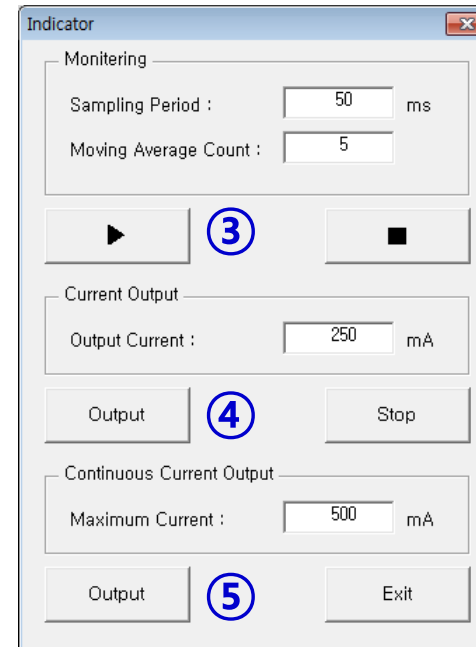
Final Stroke : 0.2 mm

Stroke Step Count : 8

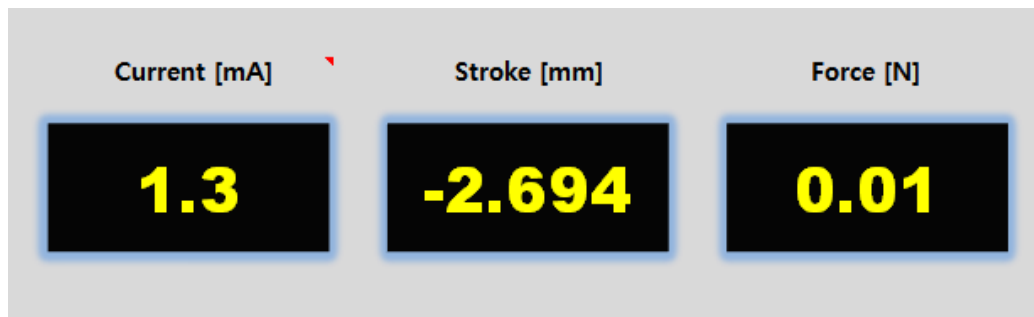
Data Monitoring

➤ Measurement explanation

1. Move to main page
2. Open the monitoring dialog
3. Start real time data and stop
4. Output current and stop
5. Output increasing and decreasing current
6. Real time sensing data



⑥



Current Measurement

➤ Measurement orders

1. First, Set zero position if stroke sensor doesn't set zero position
 - The position of zero is the start or final location of the moving parts
 - The zero position is sensed by confirming the contact via force sensor
2. Move to Current Page
3. Click "Measurement" button
4. Move the stroke sensor to the measured stroke
5. Input Initial Current, Final current and Step Count in the dialog
6. Set Series No. (Supports until five serial port)
7. Click the start button

The screenshot shows a software window titled "Current-Force". At the top, there are three digital displays for "Current :", "Stroke :", and "Force :", each showing "0.0" in yellow on a black background. To the right of these displays is an "Update" button. Below the displays, on the left, are input fields for "Initial Current :", "Final Current :", and "Step Count :", with values "0", "315", and "8" respectively. On the right, there is a "Series No :" dropdown menu set to "1". Below the dropdown are two buttons: a play button (triangle) and a stop button (square). At the bottom right is an "Exit" button. Numbered blue circles are placed over the following elements: (5) the input fields, (6) the "Series No" dropdown, and (7) the play button.

A vertical sidebar menu with a grey background. It contains five buttons: "Main", "Current", "Stroke", "Setup", and "Measurement". Below these are three more buttons: "Delete", "Print", and an unlabeled button at the bottom. Numbered blue circles are placed over the "Current" button (2) and the "Measurement" button (3).

Stroke Measurement

➤ Measurement orders

1. First, Set zero position if stroke sensor doesn't set zero position
 - The position of zero is the start or final location of the moving parts
 - The zero position is sensed by confirming the contact via force sensor
2. Move to Stroke Page
3. Click "Measurement" button
4. Input Initial Stroke, final Stroke and Step Count in the dialog
5. Move the stroke sensor under initial stroke location
6. Set Series No. and input the measured current
7. Click the start button
8. Increase stroke by moving the stroke sensor until reaching final stroke
9. After reaching final stroke, decrease stroke by returning the stroke sensor until reaching zero position

The screenshot shows the 'Stroke-Force' software window. At the top, there are three digital displays for 'Current : 0.0', 'Stroke : 0.0', and 'Force : 0.0', each with an 'Update' button to its right. Below these are input fields for 'Initial Stroke : 0 mm', 'Final Stroke : 1 mm', and 'Step Count : 20'. To the right of these are 'Series No : 1' (with a dropdown arrow) and 'Test Current : 250 mA'. A blue circle with the number 5 is next to the 'Initial Stroke' field. A blue circle with the number 6 is next to the 'Series No' dropdown. A blue circle with the number 7 is next to the 'Start' button (a right-pointing triangle). At the bottom right is an 'Exit' button.

A vertical menu bar with seven buttons: 'Main', 'Current', 'Stroke' (with a blue circle and number 2), 'Setup', 'Measurement' (with a blue circle and number 3), 'Delete', and 'Print'.

Thank You