

CONTENT

- Lifter procedure
- A brief update on the microwave setup

TARGET LIFTER SYSTEM PROCEDURES

- **docDB# : 10381**
- System status
 - The lifter control box, Lifter ADC box, and ADC power supply are connected with the appropriate cables in the slow controls rack
 - The slow controls rack is up and running.

Lifter ADC box

Lifter ADC power supply

Lifter control box



TARGET LIFTER SYSTEM PROCEDURES

1. Turn on the Lifter control box

The three LEDs should be light up

2. Turn on the ADC power supply

3. Press "Recall" button two times. (~1s pause)

This will supply the pre set voltage to the two potentiometers

Now both 10V and 12 V LEDs on the lifter ADC box should be light up.

- Now the lifter is ready



TARGET LIFTER SYSTEM PROCEDURES

Two position indicators

Absolute position : Red bar
Step count : Blue bar

7 switch indicators

The screenshot displays the control interface for the E-1039 Target Lifter System, organized into several functional panels:

- Lifter Position:** A vertical bar on the left side of the interface. It features a red bar representing the absolute position and a blue bar representing the step count. Seven green rectangular indicators are positioned along the bar, corresponding to the labels: Upper Limmit, Home, Anneal, Bottom, Middle, Top, and Lower Limmit.
- Position Controls:** A central panel containing a 'No' button, a 'Move' button with a green arrow, and a 'STOP' button with a red 'X'. Below these are 'Set Cup Position' controls, including a 'Fine Adjustments (0.001 mm)' input field set to '0', and 'up' and 'Down' buttons with green arrows.
- Advance Controls:** A panel at the bottom center with a file browser for 'Load lifter calibration file from' (showing 'E:\PHD\STF03\'), a 'Calibrate' button, a 'Position Tracking Function' slider, and a 'Disable motor current' button.
- Status:** A panel on the right side showing system status. It includes 'Moving Status' (set to 'Out of limits' with a red indicator), 'Motor Status' (set to 'IDLE' with a green indicator), 'Main Loop Running' (green indicator), and 'Calibration running' (green indicator).
- Communication Settings:** A panel on the right side with input fields for 'Remote port' (7776) and 'IP Address' (192.168.24.142), and a 'Reset' button.
- ADC Voltage:** A small display at the bottom left showing '0.0000'.
- Step Count:** A small display at the bottom center showing '0'.
- Exit VI:** A button at the bottom right with a red 'X' icon.

Position controller

Status

Very first start of the lifter system

- At the very first start of the lifter system, you will see the following status values
 - Moving Status : Out of Limits (Red)
 - Motor Status : Ideal
 - Main Loop Running : Blinking
 - Calibration running : Black
- Press the “Calibrate” button
 - Wait until lifter moves to a nearby switch and update the step count.
 - Now the lifter is ready to move

The screenshot displays the control interface for the E-1039 Target Lifter System, organized into several functional panels:

- Lifter Position:** A vertical scale on the left shows the current position relative to various limits: Upper Limmit, Home, Anneal, Bottom, Middle, Top, and Lower Limmit. A red bar indicates the current position is near the Upper Limmit.
- Position Controls:** Includes a 'Set Cup Position' field (currently 'No'), a 'Move' button, a 'STOP' button, and 'Fine Adjustments (0.001 mm)' with a '0' value and 'up/down' directional buttons.
- Advance Controlls:** Features a file selection field for 'Load lifter calibration file from' (set to 'E:\PHD\STF03\'), a 'Calibrate' button, a 'Position Tracking Function' slider, and a 'Disable' button for 'Disable motor current'.
- Status:** Shows 'Moving Status' as 'Out of limits' (red indicator), 'Motor Status' as 'IDLE' (green indicator), 'Main Loop Running' (green indicator), and 'Calibration running' (green indicator).
- Communication Settings:** Includes fields for 'Remote port' (7776) and 'IP Address' (192.168.24.142), along with a 'Reset' button.
- ADC Voltage:** A readout at the bottom left shows '0.0000'.
- Step Count:** A readout at the bottom center shows '0'.
- Exit VI:** A red 'Exit VI' button is located at the bottom right.

E-1039 Target Lifter System

Lifter Position

Upper Limit

Home

Anneal

Bottom

Middle

Top

Lower Limit

DC Voltage: 18740

Step Count: -58144

Status

Moving Status: In the limits

Motor Status: IDLE

Main Loop Running

Calibrating

Position Controls

Pos:

Move

STOP

Set Cup Position

Fine Adjustments (0.001 mm):

up

Down

Advance Controls

Load lifter calibration file from:

Calibrate

Position Tracking Function:

Disable motor current:

Communication Settings

Remote port:

IP Address:

Reset

Err & V

error out

status	code
<input checked="" type="checkbox"/>	0

error ID

status	code
<input checked="" type="checkbox"/>	0

error in

status	code
no error	0

error out 3

status	code
no error	0

UPDATE ON THE MICROWAVE SETUP

- The microwave power supply is connected to the interlock box.
- The box contains two temperature monitors and one flow monitor. Each module can generate an interrupt and bring the power supply to fault status.

T-Type thermocouples are installed on the EIO top plate and the output tube.



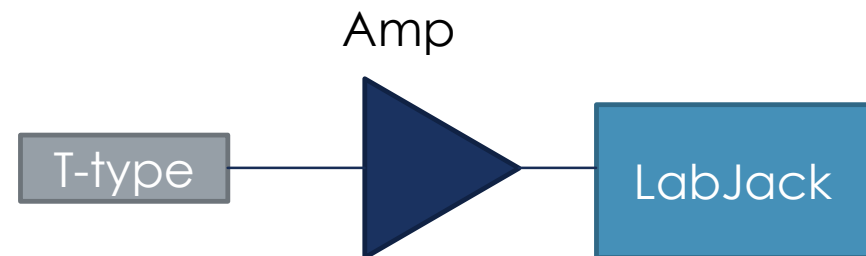
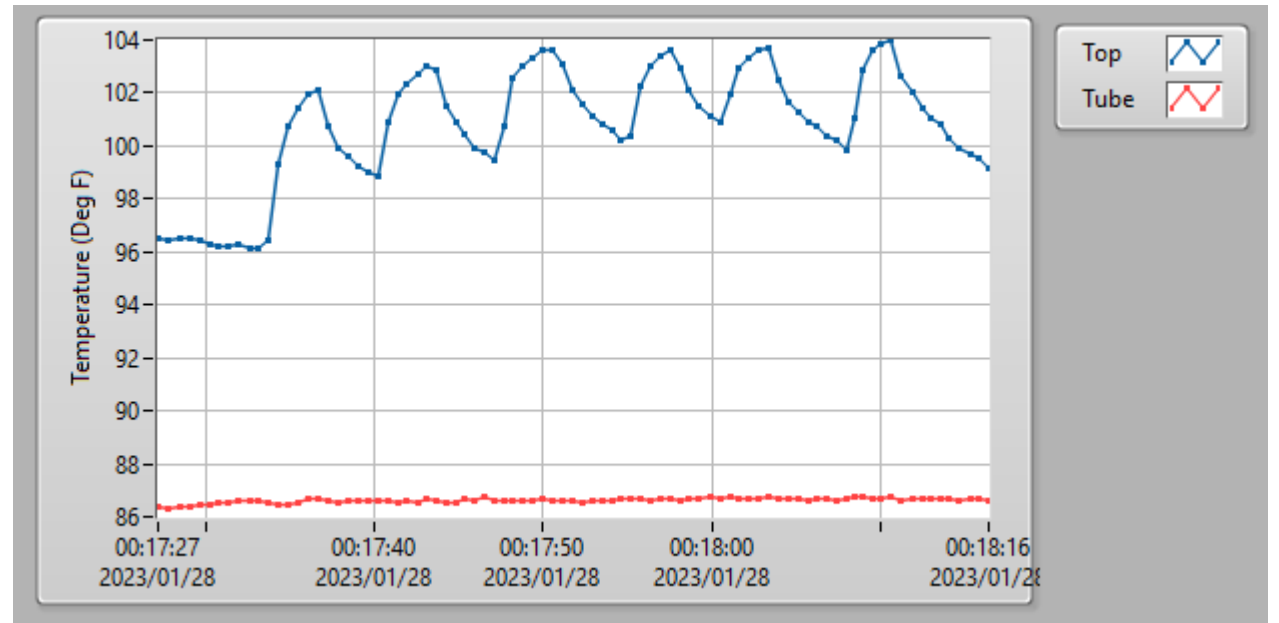
The plan is to read the temperatures using an DAQ and send interlock signals from the DAQ.

The two temperature modules are bypassed from the interlock circuit.

The available DAQ is LabJack U3 which is cheaper than the MCC DAQ (dedicated for thermocouples)

However, the sensitivity of the LabJack is not sufficient to read thermocouple voltage.

As a test, an op-amp amplifier was added between the thermocouple and the LabJack to amplify the thermocouple voltage. This was successful and observed better response.



The output of the flow sensor is set of pulse. The frequency of the signal is proportional to the flow rate.

As a test the DAQ was configured to count frequency of an external signal.

Configured an Arduino as 500 Hz pulse generator and was able to read the correct frequency from the DAQ. This confirms that we can read the flow rate from the DAQ

I am working on the signal conditioning circuitry to match the sensor voltage to DAQ

After this modification we will have fully control of the microwave interlock box from the control room.

