

Heat Gun/ IR Camera

Control Software

User Manual

Ver. 1.0 11/24/2020

1. Setup

Step 1:

Do not yet plug in or power on the power strip on the cart within Cave 1. Connect a cat5 or cat6 ethernet cable from the KVM Extender box on the cart to a patch panel.

Step 2:

In the data room connect another cat 5 or cat 6 cable from the same patch panel to the KVM Receiver unit.

Step 3:

Plug in the heat gun to the wall outlet, then point the heat gun and IR camera at your DUT. Ensure the IR camera has an ethernet connection to the computer on the Cave 1 cart (not the I/O box). When facing the back of the computer, the correct ethernet port to use is the one to your right.

Step 4: Turn on the heat gun by holding its rotary button for two seconds. The fan should start up at minimum speed and there should be no heating.

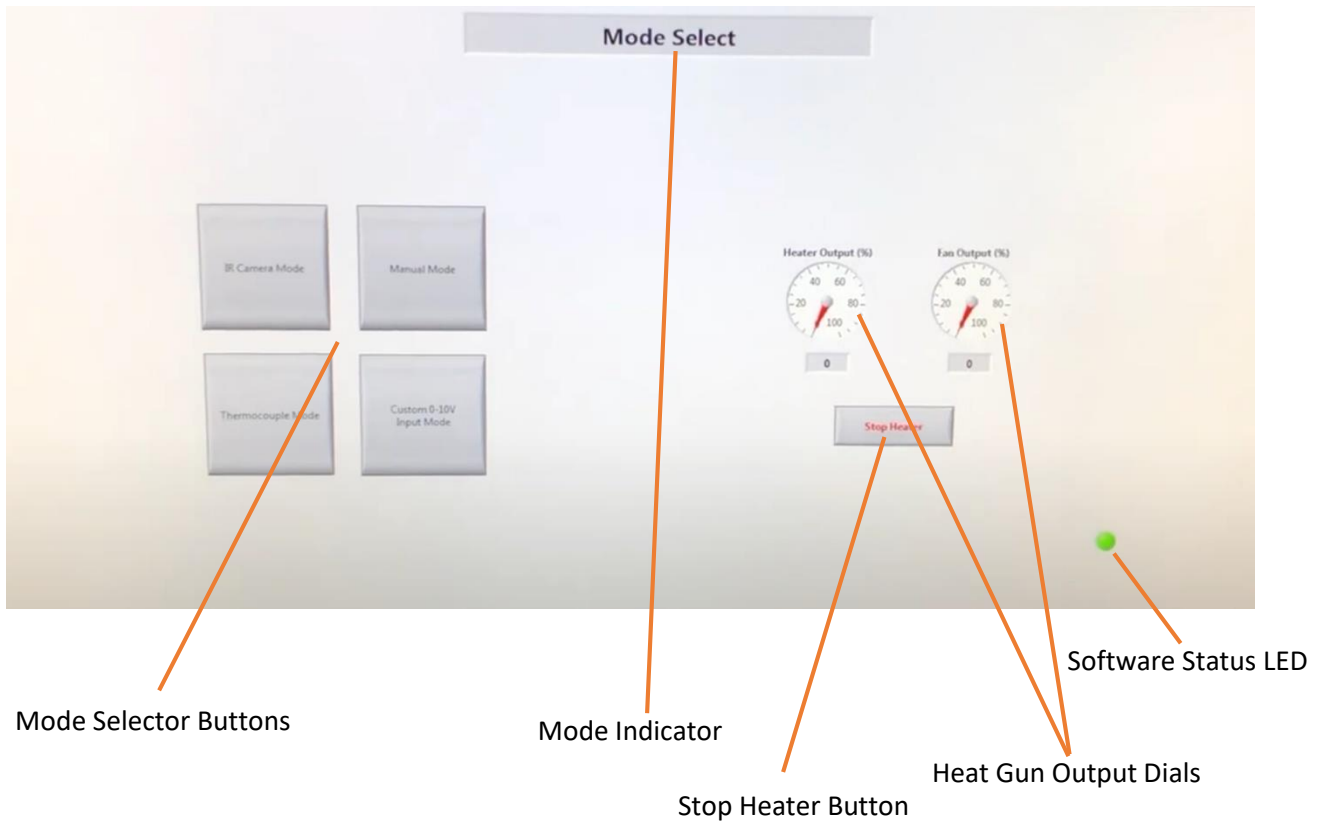
Step 5: HOLD the rotary button for two seconds WHILE SIMULTANEOUSLY turning the button one quarter turn clockwise. Release the button. You should enter the heat gun's control menu. Turn the rotary button one click counter-clockwise, the menu should read 'store.' Press the rotary button.

Step 6:

Plug in and power on the power strip on the cart. Turn on the computer. If the KVM Extender and KVM Receiver were wired correctly, the monitor in the data room should be cloned to the monitor on the cart in Cave 1. If the mouse on the remote monitor in the data room isn't working, but the keyboard is, hold both mouse buttons and press scroll lock on the keyboard. The mouse should start working.

Step 7: Log in to 'SEE Guest' and open the Heat Gun Control Software icon on the desktop.

2. The Main Interface



Mode Selector Buttons: Click to select the control mode.

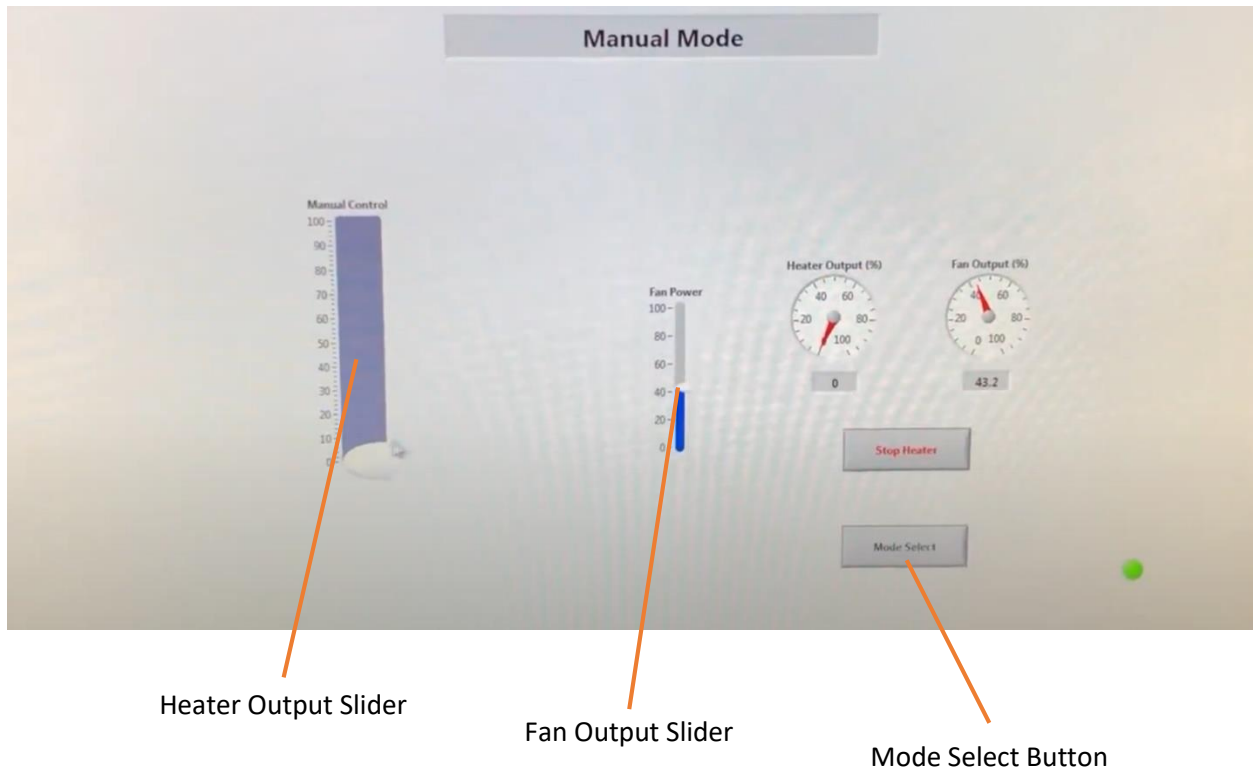
Mode Indicator: Displays the selected mode.

Stop Heater Button: Click this to turn heater output % to zero immediately. Click again to restore heating. When restored, heater will begin heating from zero, with the exception of manual mode.

Heat Gun Output Dials: Show in real time the output of the heat gun and the fan.

Software Status LED: When this LED is blinking, the software is running. If the light stops blinking, the software has locked up and needs to be restarted.

3. Manual Mode



Heater Output Slider: Drag the slider to select the output percentage of the heater from 0% (room temperature) to 100% (650 °C).

Fan Output Slider: Drag the slider to select the fan speed. This slider is present in all modes.

Mode Select: Click this to return to the main (mode select) interface. This button is present in all modes.

To use Manual Mode:

Step 1:

Click on manual mode. Two sliders should appear, one large and one small. The small slider controls the fan speed, the large slider controls the heater output.

Step 2: Adjust the fan speed and heater output to desired levels. The heat gun will maintain these settings as long as manual mode is enabled. There is no temperature monitoring or feedback loop in this mode.

4. IR Camera Mode



ROI Tools Camera Window Temperature Offset ROI Temperature Temperature Setpoint Upper Temperature Limit/
Over temp LED

ROI Tools: Select which ROI type (point and box are currently available), then place the ROI in the camera window. You can also zoom, manipulate ROIs, and click and drag the image with the other tools.

Camera Window: Shows the IR camera's output and your selected ROI. The cursor always shows a temperature reading wherever it is pointing in the camera window. Right click the Camera Window for extra options, for example reset zoom to default, clear ROIs, and change the color palette.

Temperature Offset: Increase or decrease the reading of the ROI temperature. Useful if the external temperature of the part does not match a known internal temperature of the part.

ROI Temperature: Temperature reading from the selected ROI.

Temperature Setpoint: Sets the temperature the heat gun needs to maintain.

Upper Temperature Limit/ Over temp LED: If the ROI temperature reaches this value, the heater output is automatically cut to zero until the ROI temperature drops below this value. The heater will resume from 0% when the ROI temperature falls below the temperature limit. The over temp LED lights when the upper temperature limit has been reached.

To use IR Camera Mode:

Step 1:

Click on IR Camera Mode. Verify the IR camera is properly connected. Wait a few moments for the camera view to initialize. Point the camera accordingly.

Step 2:

Select your desired ROI tool. As of 11/24/20 there are two options: point and box. Create your ROI on your part. It may be necessary to clear a previous ROI by right-clicking on the camera view and selecting 'clear ROI.' The temperature box will display the average (or point) temperature of your ROI.

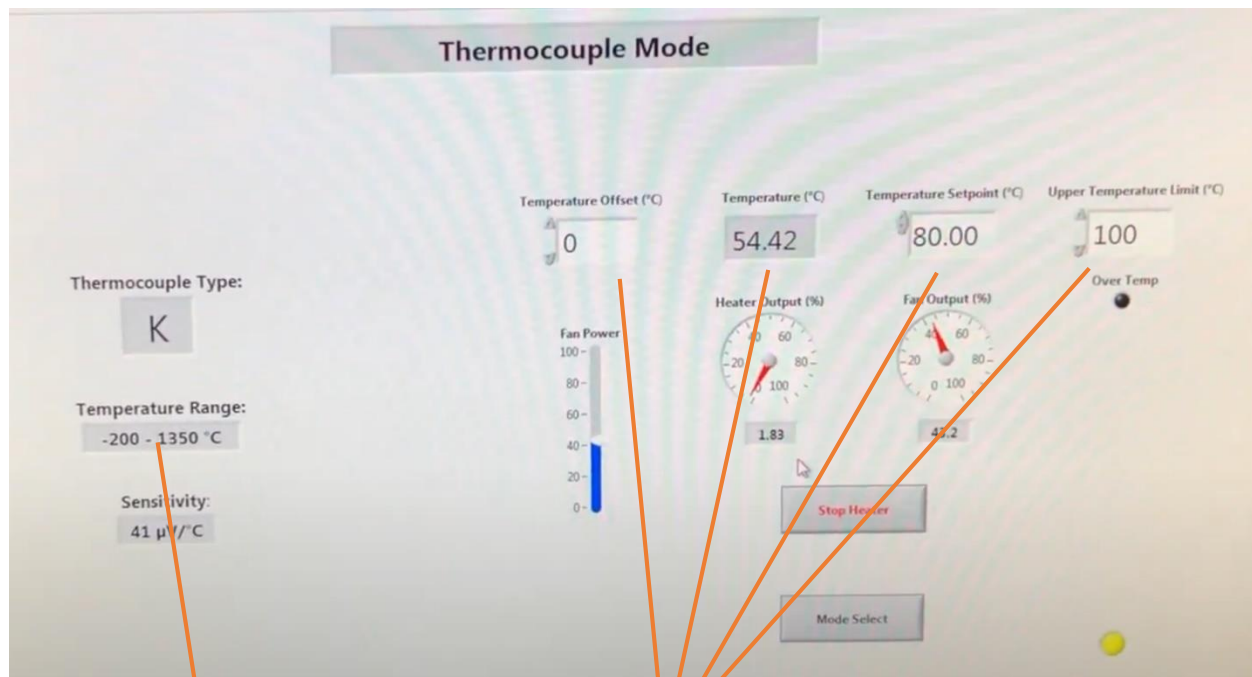
Step 3:

Set your desired fan speed.

Step 4:

Set your desired temperature set point and maximum temperature. If your ROI temperature reaches the maximum temperature, the heater is automatically cut to zero until the temperature drops below the maximum, at which point the heater will begin heating again from zero.

5. Thermocouple Mode



Thermocouple Attributes

Heater Tools

Thermocouple Attributes: Automatically shows the type, effective temperature range, and sensitivity of the selected thermocouple type.

Heater Tools: See the IR Camera section (Page 5). These tools are the same in IR Camera Mode, Thermocouple Mode, and Custom Input Mode.

To use Thermocouple Mode:

Step 1:

Select thermocouple mode on the mode select screen.

Step 2:

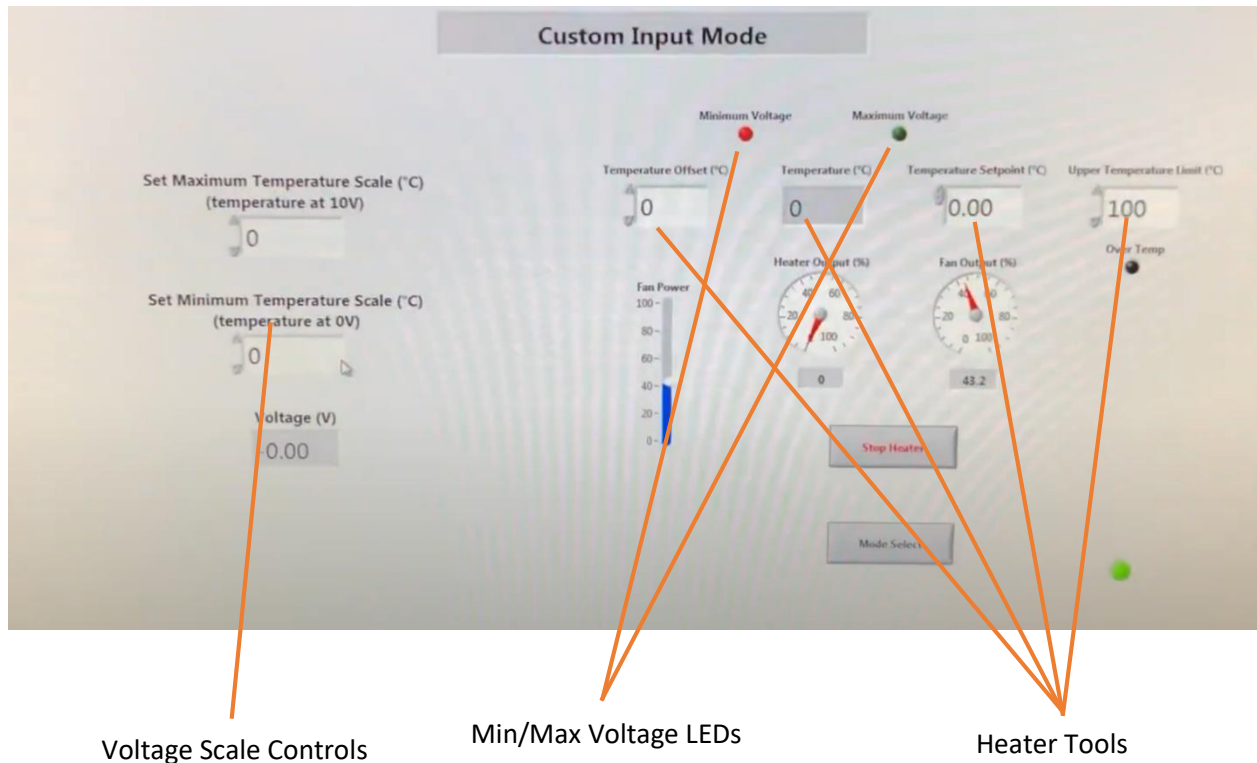
Select the thermocouple type you wish to use. Verify that the thermocouple is plugged into the I/O box and is secured to your DUT. Ensure that the two leads of the thermocouple secured to your DUT are making contact with each other and with your part.

Step 3:

Once you have verified your connection, the temperature box should show the temperature reading from the thermocouple. Set your desired temperature and maximum temperature. If the thermocouple temperature reading reaches the maximum temperature, the heater is automatically cut to zero until the temperature drops below the maximum, at which point the heater will begin heating again from zero.

6. Custom Input Mode

Note that this mode is only usable if your DUT is capable of outputting a linearized 0-10V DC signal. This mode is intended to be used when your DUT has its own temperature sensor that is capable of outputting the temperature as a linear function of the 0-10V DC signal.



Voltage Scale Controls: Set the extremes of the temperature scale from your part. For example, if your part can read from -180 to 450 °C and these values correspond to 0V and 10V outputted by your part, respectively, and assuming the temperature scales linearly to voltage, enter in “-180” as the minimum temperature scale value and “450” as the maximum temperature scale value. The voltage value reads the raw voltage signal from the BNC connector.

Min/Max Voltage LEDs: These light when the minimum (0V) or maximum (10V) voltage is read. The temperature of your part bottoms or maxes out at the values you set. For example, if you set 450 °C as the maximum temperature, and the voltage detected exceeds 10V, the temperature reading will stay at 450 °C. Please do not exceed 10V. Negative voltages can be read but the temperature reading will show the minimum (0V) value.

Heater Tools: See the IR Camera section (Page 5). These tools are the same in IR Camera Mode, Thermocouple Mode, and Custom Input Mode.

To use Custom Input Mode:

Step 1:

Plug in a BNC connector carrying your 0-10V DC signal to the BNC connection on the I/O box.

Step 2:

Select custom voltage input mode in the mode selection screen. To the left of the screen you should see the voltage being read along with settings for what temperatures your temperature scale min and max out at. Set these values.

Step 3:

The temperature box should show the temperature corresponding to the input voltage and the scale you set. Set your desired set temperature and maximum temperature. If the voltage scale temperature reading reaches the maximum temperature, the heater is automatically cut to zero until the temperature drops below the maximum, at which point the heater will begin heating again from zero.

7. Shutdown:

Step 1:

Press and hold the rotary button on the heat gun for 5 seconds. This will put the heat gun into cooldown mode, in which the fan spins to maximum and the heater is turned off for two minutes. It will automatically go to sleep after the cooldown mode, at which point it is safe to unplug from the wall.

Step 2:

Close out of the control program and turn off the PC.

Step 3:

SWITCH OFF THE POWER STRIP ON THE CART. The IR camera is always on when it receives power. To preserve the lifetime of the camera, switch off the power strip to turn the camera off. Unplug the power strip.

Step 4:

Disconnect the cat-6 wire from the heat gun. Disconnect any thermocouple or BNC cables from your part to the I/O instrumentation box.

8. Troubleshooting:

The mouse on the remote monitor in the data room isn't working, but the keyboard and monitor are:

At the remote console (in the data room), press and hold both mouse buttons and press the 'scroll lock' key on the keyboard.

The heat gun isn't accepting commands from the control software, even though the heater output % and fan output % dials are going up:

On the heat gun itself, press and hold the rotary button for two seconds WHILE ALSO turning the button at least ¼ turn clockwise. You should enter an internal menu on the heat gun's display. Cycle one click of the rotary button counter-clockwise. The display should read "STORE." Press the rotary button.

The Temperature display in the control software is reading "N/A".

Restart the control software. There is no need to restart the computer.

The Status LED has stopped blinking:

Restart the control software. It may be necessary to open the task manager (control+shift+escape) if the program does not close from the 'X' button. Restart the PC if necessary.

There is no signal from the IR Camera to either Research IR or the control software:

Check the ethernet connection to the IR Camera and to the power strip. The cable going to the IR camera should be in the "output" port on the PoE injector, and the cable going to the computer should be in the "input" port on the PoE injector. Check the ethernet connection to the back of the computer. There are two ethernet ports on the back of the computer. When facing the back of the computer (looking towards the back of the monitor), the correct ethernet port to use is the one to your right.

The signal from the IR camera can only go to one program at a time. It cannot be called simultaneously to Research IR and the control software.

The Mode Select Button, or any other button, in the control software is not working properly:

Restart the control software. There is no need to restart the computer.