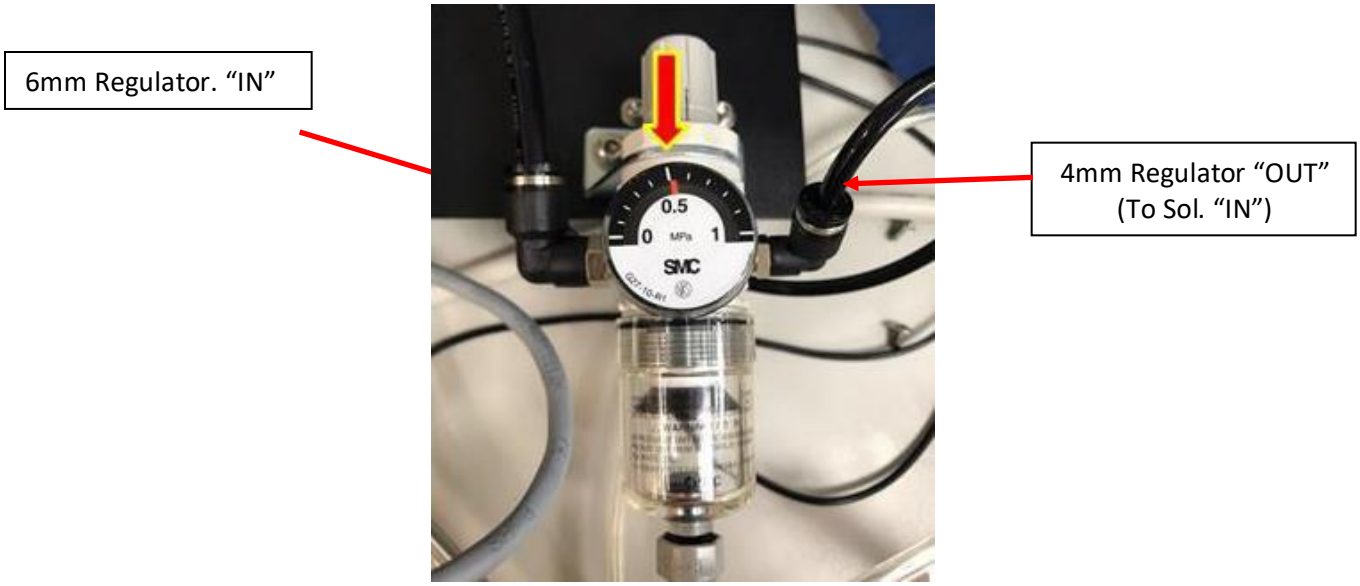
How to Set Up the Height Sensor

Height Sensor: If the height of the workpiece is not 100% consistent from part-to-part, using this optional accessory and function could improve your contact dispense outcomes. A properly installed and adjusted contact probe height sensor will detect the height of discreet points along a workpiece and automatically adjust the tip height before the robot dispenses. **The contact probe height sensor should not be dragged along a continuous line!**

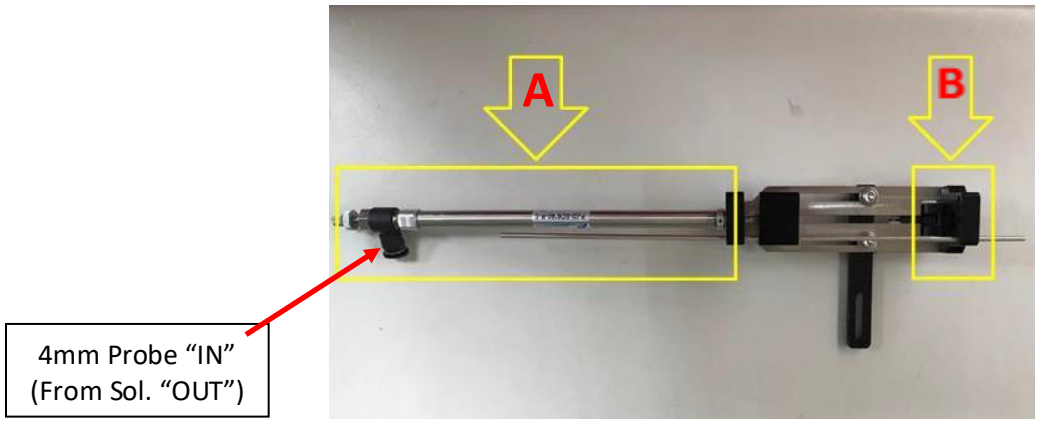
Follow the steps outlined in the 7361667 "Instructions for Height Sensor Installation" (document # 7362786) to install the Height Sensor onto the robot. (Remember to set the probe height 5-8mm above the level of the dispense tip and to set the probe regulator to 0.2MPa)

After wiring the Height Sensor cables to the robot I/O Connector, you can trigger the I/O Output to verify the I/O Output and Input pins you are using. (When you click on the Output, the probe will toggle down, and the associated Input will illuminate.) These are the I/O pin values you will set for the Height Sensor.

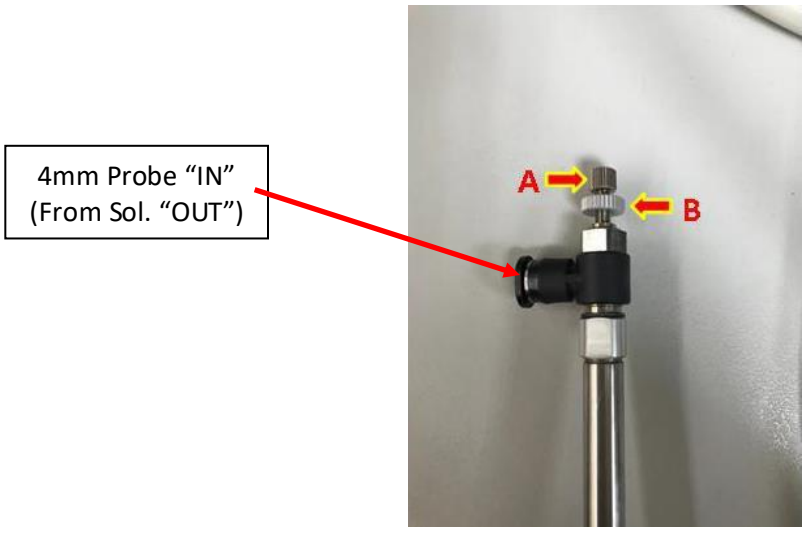
1. Adjust the air pressure to 0.5 MPa (≈70 PSI)



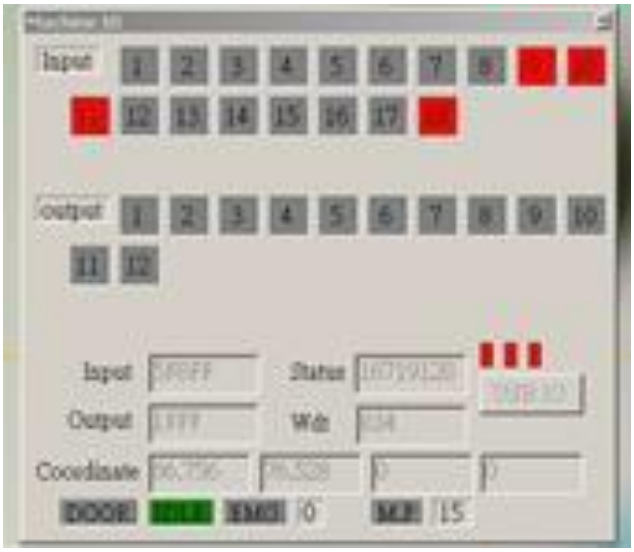
2. Adjust Height sensor (A is pneumatic cylinder, B is an optical sensor

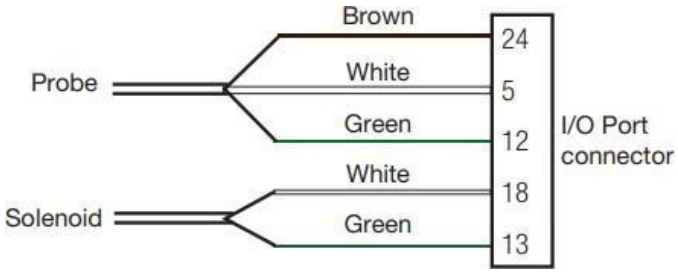


3. To adjust the pneumatic cylinder pressure, loosen the “B” locking screw and adjust the “A” knob/set screw. (The tighter A is, the faster the probe retracts). Adjust “A” until the pneumatic cylinder retracts smoothly and then tighten “B” locking screw.



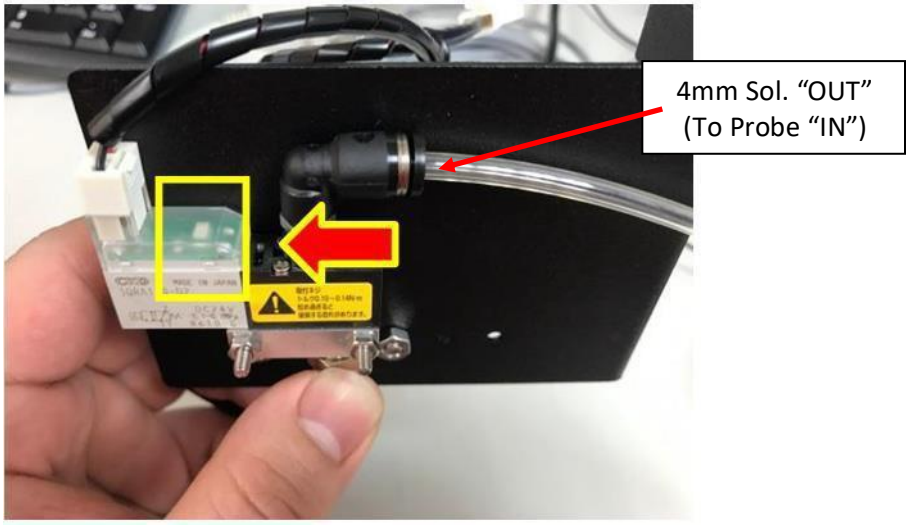
4. Optical sensor signal. Input 5 is OFF, means the optical sensor light barrier is not broken (pneumatic cylinder is going up). Input 5 is ON, means the optical sensor light barrier is broken (pneumatic cylinder is going down). Hint: Use Machine IO to check (System Setup IO).



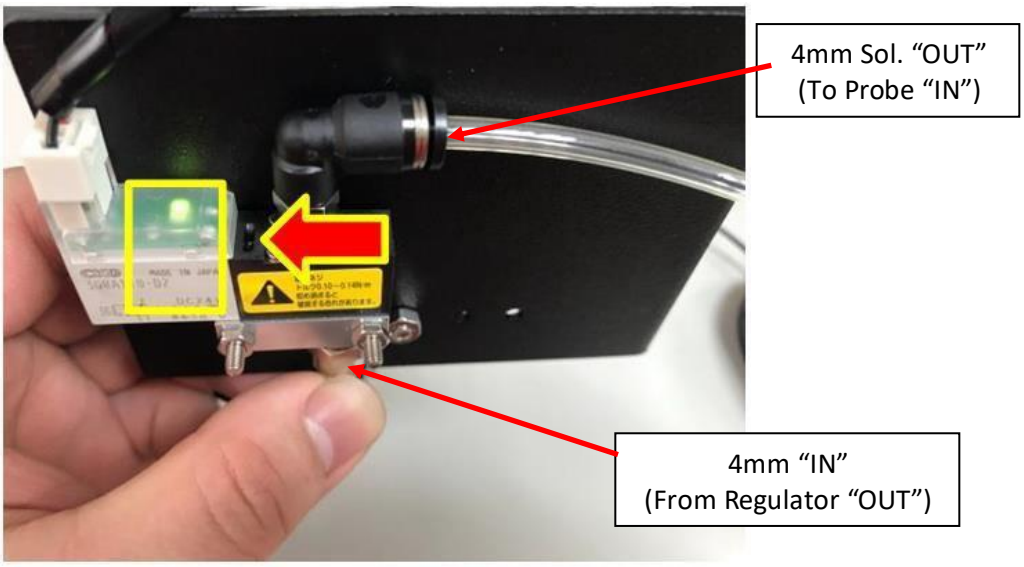


Robot I/O Port Pin Assignments			
Pin 1	Input 1	Pin 14	Output 1
Pin 2	Input 2	Pin 15	Output 2
Pin 3	Input 3	Pin 16	Output 3
Pin 4	Input 4	Pin 17	Output 4
Pin 5	Input 5	Pin 18	Output 5
Pin 6	Input 6	Pin 19	Output 6
Pin 7	Input 7	Pin 20	Output 7
Pin 8	Input 8	Pin 21	Output 8
Pin 9	n/a	Pin 22	n/a
Pin 10	n/a	Pin 23	n/a
Pin 11	Ground	Pin 24	+24 VDC
Pin 12	Ground	Pin 25	+24 VDC
Pin 13	Ground	n/a	n/a

5. Solenoid valve. When Output 5 is OFF, the LED of the solenoid is dark (When I/O is off, the pneumatic cylinder is going up).



When Output 5 is ON, the LED of the solenoid lights up (When I/O is on, the pneumatic cylinder is going down)



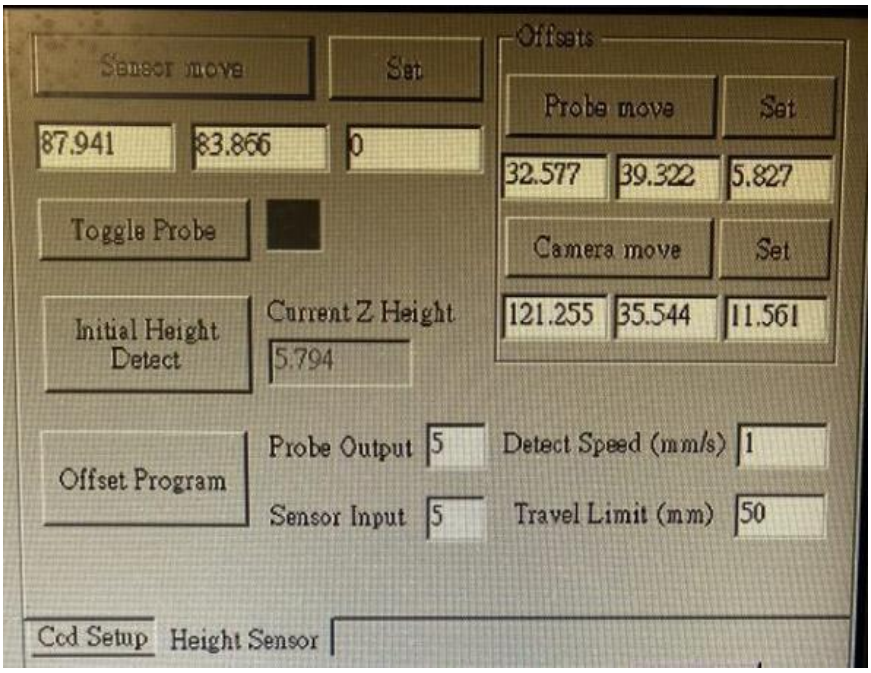
How to Use Height Sensor

Enable Height Sensor

- Click <System Setup> then click <Open>
- Check "Height Sensor" – the <Toggle Probe> button in the Tab bar – means function enabled!
- Note: Complete the "Robot Initial Setup" before using the Height Sensor

Height Sensor Setup

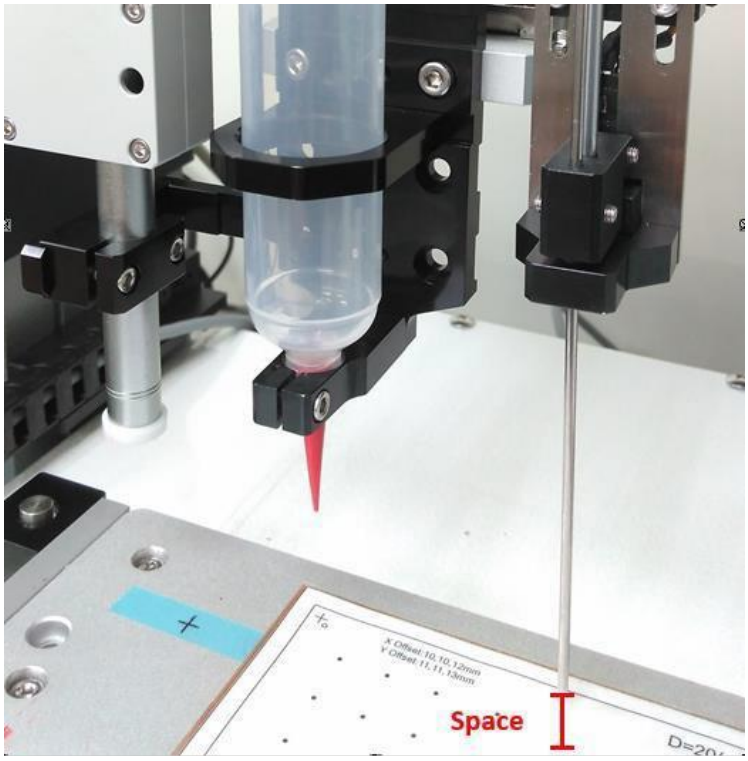
1. Click <CAMERA> tab, click <Setup> (top of camera screen), then click on Height Sensor tab – above keypad.
2. The Height Sensor fields appear
3. In fields, top right corner of Height Sensor box, enter
    a. Probe Output – I/O Output pin you are using (default = 5)
    b. Sensor Input – I/O Input pin you are using (default = 5)
    c. Detect Speed (mm/s) – 1mm/s (recommended) Range: 1-20mm/s
    d. Travel Limit (mm): 15mm (recommended) Range:1-100mm



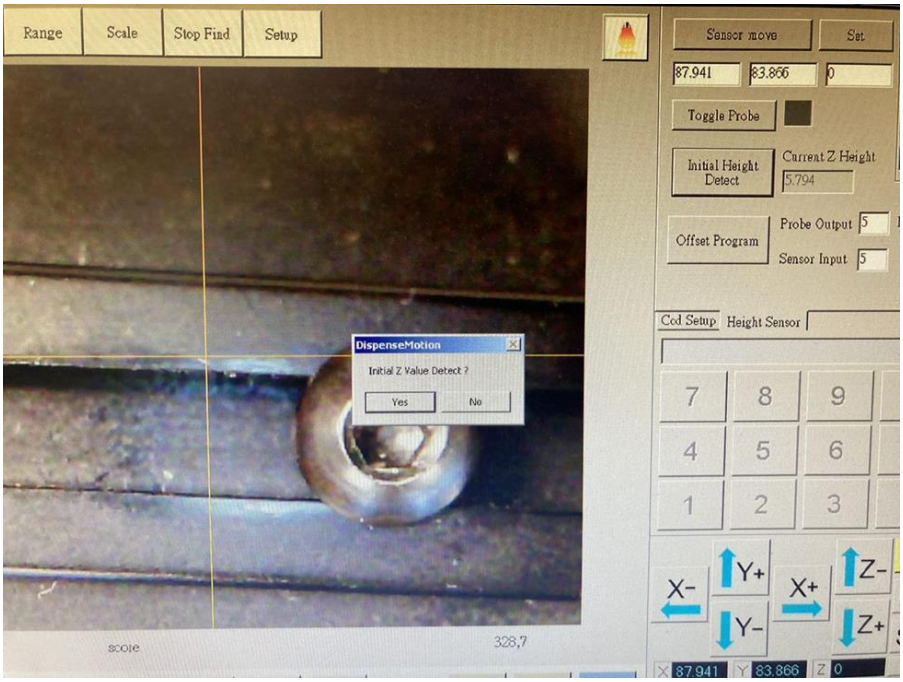
Notes: Detect Speed = Z-head speed to workpiece, after probe extends
Travel Limit = range of Z-axis movement to detect part

4. Click <Toggle Probe> - the probe extends from height sensor.

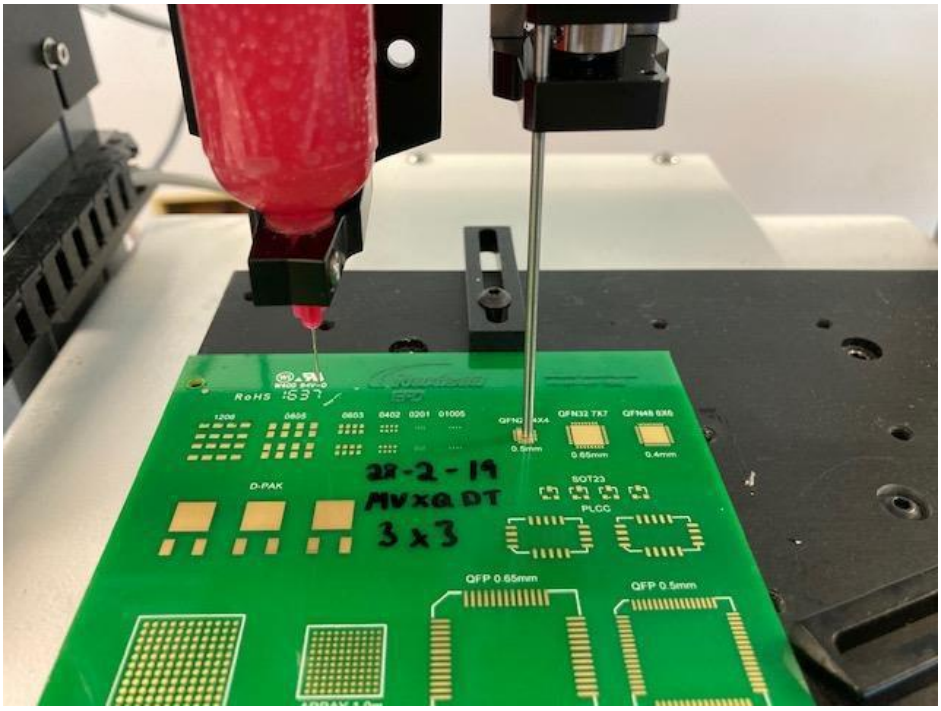
5. Jog the extended probe tip to a target dispense location on the workpiece – lower the extended probe until it is centered over the target and touching the substrate – then Z-up to set the probe ~3mm above the same target.



6. Click <Set> next to <Sensor Move>, the robot will record the current positional coordinates for the deployed probe at ~3mm above the target. Then click <Initial Height Detect>, the robot will move the probe up and then down again until it touches the target on the substrate. (This establishes the Current Z-Height Value).



7. Now, set the Probe-to-Camera Offset.
8. Hit the <Toggle Probe> button to extend the probe and jog the probe over a target on the workpiece. With the probe centered over the target click the <Set> button next to >ProbeMove



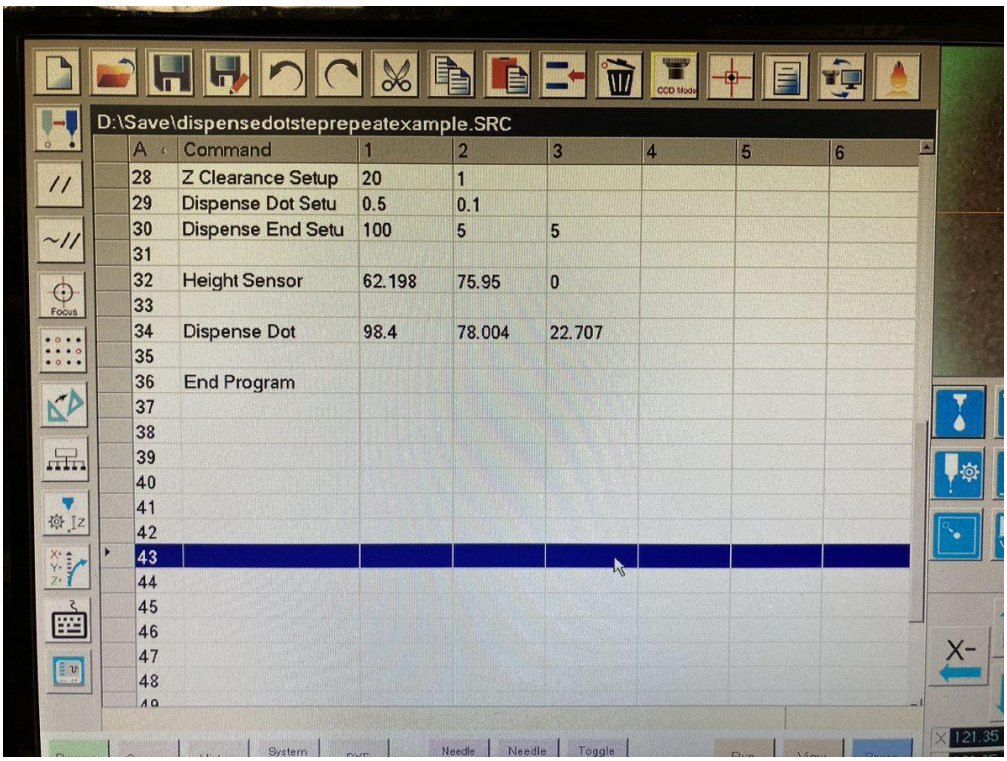
9. Hit the <Toggle Probe> button to retract the probe, then jog the camera over the same target, until the target is centered and in sharp focus, then click <Set> next to <Camera Move>.

10. DONE! The Height Sensor is now setup and ready to use.

Note: If you click <Offset Program> at this point the system will update the Z-height values in the open program. (The system will lower and raise the probe. If the Z-height value is different, the system prompts user to confirm and accept the new values – click <YES>

Use Height Sensor in Program

1. Open the desired dispense program, then click <Toggle Probe>
2. Jog to the target location for the height check on the workpiece
3. Jog the Z-axis to place probe ~3mm above the target on the workpiece
4. Double-click on the Address Row where you want to install a Height Sensor command, then select “Height Sensor” command from the drop-down menu
5. Click <OK> to accept the current XYZ values
6. Click <Toggle Probe> to retract the probe



The system will now check the workpiece height at that target location each time the program runs.