SkyCamOne Pi HAT Install Helper

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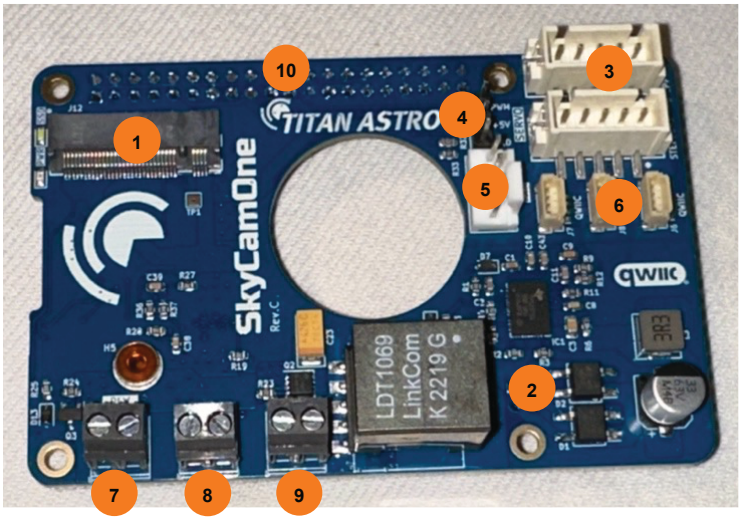
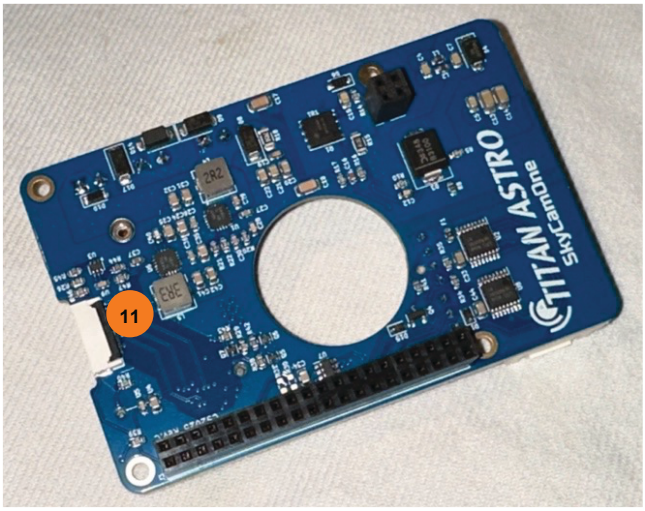
I put this together so that everything you need to install is in one group. It took me some time to find out all the information I was looking for, and some steps were not 100% clear to me. Hopefully this helps others.

Some portions of this guide are copied from the Titan Astro quick start guide, I have just expanded on their directions to help.





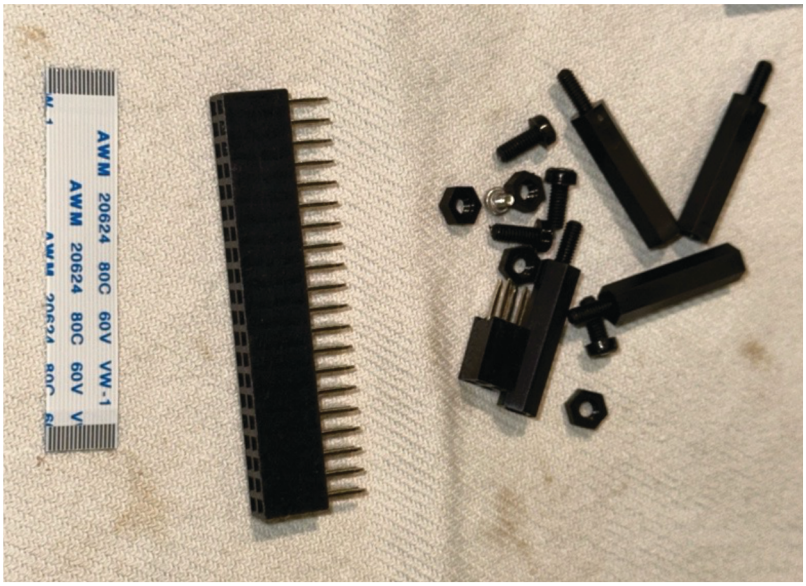
The Titan Astro SkyCamOne combines multiple HATs into one board to provide Power over Ethernet, PCIe memory expansion, sensor compatibility, servo control and heater / fan control.

Options offered through this HAT:

1. M.2 2230 SSD PCIe NVMe slot
2. PoE+ (Power over Ethernet) IEEE 802.3at type 2 with 30 Watt output
3. Double stepper motor control at 5 Volts
4. Servo motor control
5. Fan control for standard 4-pin PC fans at 5 Volts
6. Three I2C connectors (QWIIC) for sensors (up to max. 128 sensors, daisy chained)
7. Dome/dew heater control at 5 Volts and max. 3.5 Watt
8. Power output at 12 Volts
9. 12 Volts power in (car, battery etc)
10. Raspberry Pi GPIO Connector
11. PCIe ribbon cable connection

The center opening in the board allows for air circulation with or without the PI5 active cooling fan installed. You need to install the cooling fan first before installing the SkyCamOne HAT.

Included hardware contains spacers, GPIO extension and a ribbon cable.



Installing the SkyCamOne HAT

1. Install ribbon cable into the HAT
   - Lift the ribbon cable holder, then insert the cable with the copper contact points facing down. With the ribbon cable fully and evenly inserted into the port, push the cable holder down to secure the ribbon cable firmly in place.
   - I found this to be a tight connection to get in easily, I suggest using a pair of pliers to grip the cable close to the tab to assist with getting the cable in snugly.
   - Properly inserted, metal tabs will barely be visible. This connection is very tight to try pushing in, pliers will help in this step.
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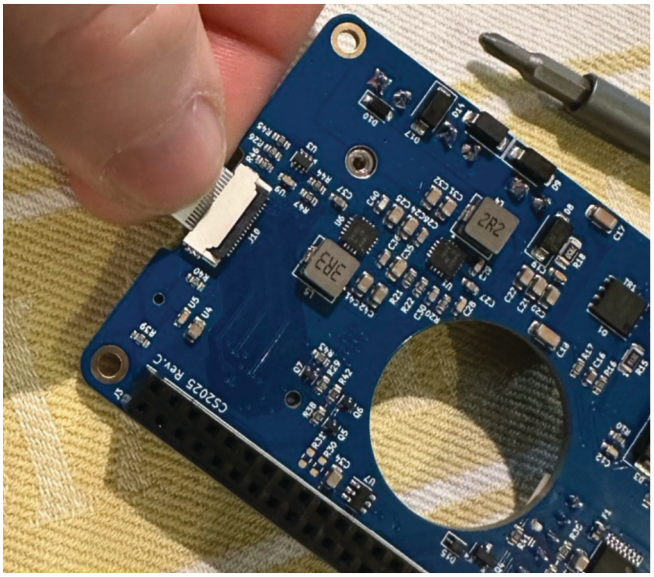
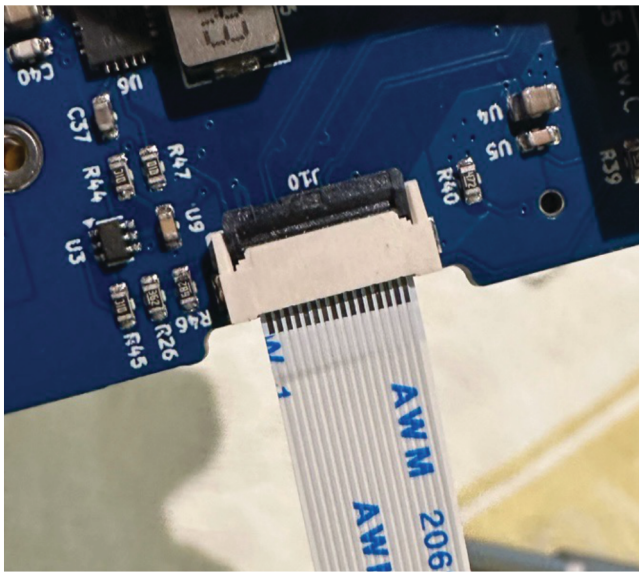
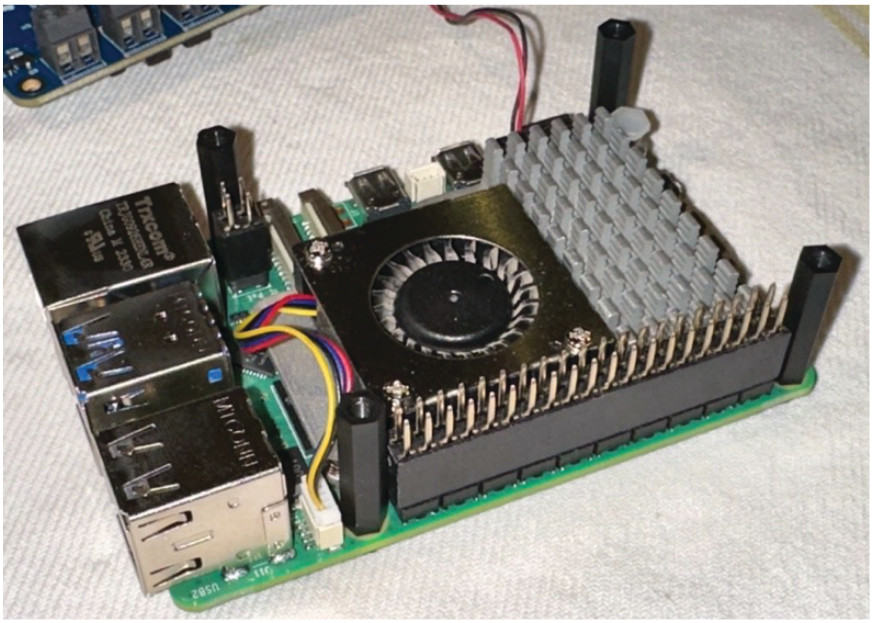
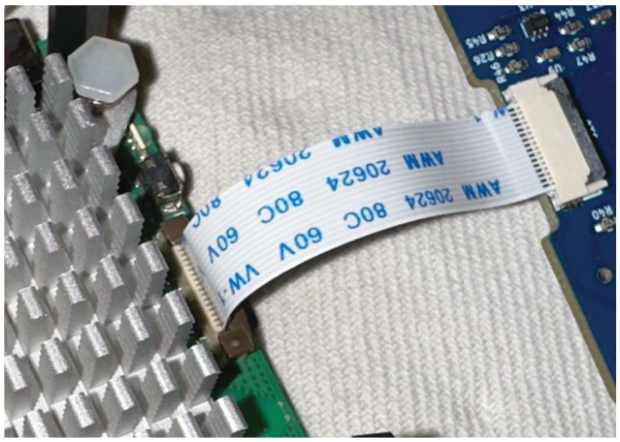


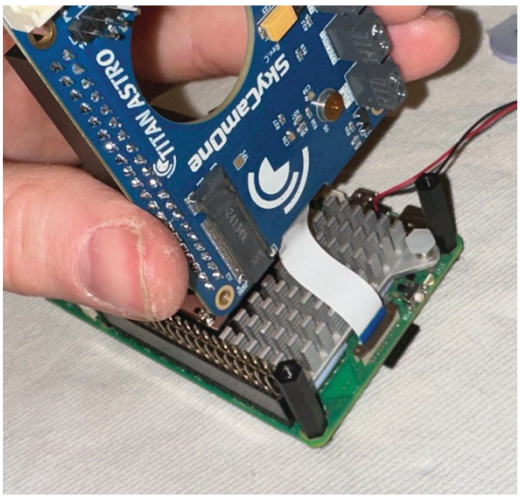


2. Install Spacers and Risers
   - Install the GPIO rising header and 4-pin PoE rising header
   - Install the four spacer posts and tighten with nuts

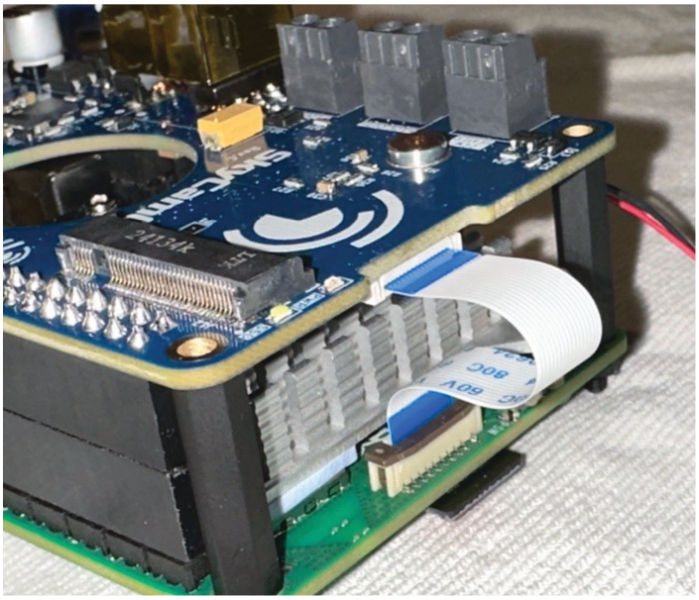


3. If you are using Raspberry PI cameras, I would recommend connecting those ribbon cables now
4. At this point, I would recommend installing the other end of the PCIe ribbon cable to your Pi before final install of the HAT on top. It is a very tight fit to try doing after install





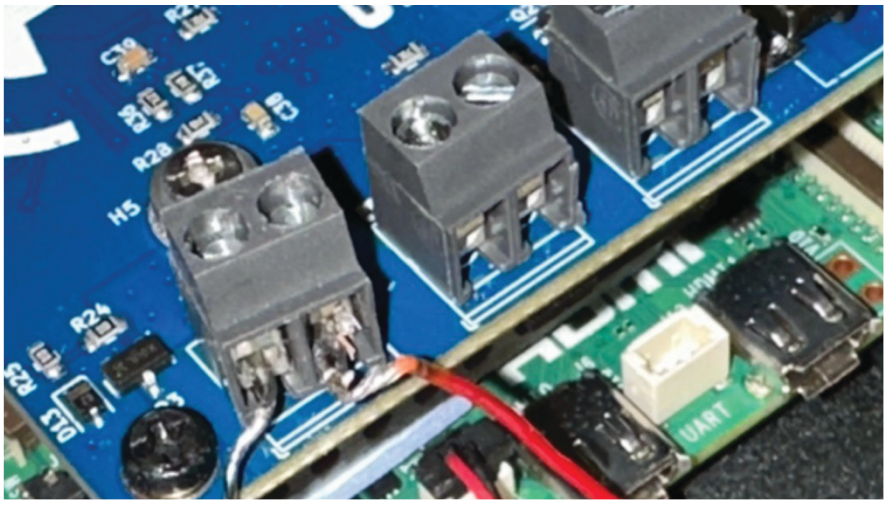
   - Connecting the ribbon cable to your Pi is not as tight, you should be able to put in with just your fingers.
   - Lift the tab on the the PCIe connector and insert the ribbon cable with the silver facing in, insert tightly and push the tab back in to lock
   - Now you can flip the HAT over and install it onto your Pi



5. Install included screws to finish installation of board
6. Install SSD (Optional)
   - My kit had the screw for mounting the SSD in the bag with the spacers and ribbon cable. Be careful if dumping out.
   - May also have like my board where over the screw hole for mounting the SSD, it has a clear piece of tape that must be removed first. A sharp knife makes that easier to accomplish.
7. Connect any sensor peripherals you may have
   - Stepper motors:
     - Connect up to two stepper motors to the headers marked as STEPPER1 and STEPPER2. The steppers can only be connected in one way for the connector to fit into the header.
   - Servo:
     - Connect a servo to the header marked as SERVO. The servo can be connected in two ways, as the connector can be reversed. If your servo does not work, turn this connector around.
   - Sensors:
     - Connect any I2C QWIIC capable sensor using a QWIIC cable to either one of the three available headers marked as QWIIC. You can also chain sensors that have two QWIIC connectors on board. You can connect up to a maximum of 255 sensors to the SkyCamOne HAT.
   - 5V PC Fan:
     - Connect a 5V PWM PC Fan (any size) to the 4-pin header marked FAN.
   - 5V Dew Heater:
     - Connect a 5V-12V, 3.5W PWM dew heater to the Dew Heater control

Note: Use a small wire for this connection if you have to extend the length of your dew heater wiring. Tinning the wire with solder will also help in installation.

I noticed that like with the ribbon cable, a pair of pliers helps with this install to get the wires inserted deeply. Make sure to tighten screws down to secure connection.



8. This completes the hardware install portion

Software Update and Install

1. First, ensure that your Raspberry Pi runs the latest software. Run the following command to update:

- $ sudo apt update && sudo apt full-upgrade

2. Next, ensure hat your Raspberry Pi firmware is up-to-date. Run the following command to update your firmware to the latest version:

- $ sudo rpi-eeprom-update -a

3. Reboot with sudo reboot.

4. Resources needed for SkyCamOne HAT
   - Run the Titan Astro install script to install needed modules for SkyCamOne to operate properly
     - From your home Pi directory type:

       bash <(curl -s https://titanastro.com/skycamone/install.txt)

       This will install everything and several test scripts for your HAT

5. AllSky Configurations for SkyCamOne
   - Indi-Allsky
     - https://titanastro.com/indi-allsky-configuration/
     - Use dew_heater_status and fan_status in image labels to show the on/off status of the devices.

   - TJ's Allsky
     - https://titanastro.com/tj-allsky-configuration/

After all of this, you should have a properly functioning SkyCamOne HAT

Links

https://titanastro.com/store/SkyCamOne-HAT-for-Raspberry-Pi-5-Rev-C-p691975446

https://titanastro.com/software-installation/

https://github.com/aaronwmorris/indi-allsky

https://github.com/AllskyTeam/allsky/

https://github.com/titanastro