9000 Series UAV User's Manual

What you receive with the 9000 Series UAV Package:

1. 9000 Series IR Camera
2. 9000 Series IR Camera ¼-20 Mount
3. Mini-Computer system with composite out
4. 4Gb Micro-SD card (installed)
5. microSD to SD Card adapter
6. GPS module (installed)
7. IR Camera USB Cable
8. Power Adapter Cable
9. 8gb Flash Drive
10. Image Capture Trigger Cable

1. The 9000 Series IR Camera has a single USB 2.0 point of connectivity. It has a retaining ring which allows it to be directly mounted, through an appropriate size hole, on the UAV or gimbal system. The 9000 Series IR Cameras have a warm up time that affects both image quality and accuracy. It is recommended that you warm up the camera for at least 5-10 minutes via a standard USB connection to a portable PC. You may use this time to set the focus based on the planned AGL (altitude above ground level) for which the camera will be flying.

2. If needed, a ¼-20 mount is included with the system. To install the 9000 Series camera into the ¼-20 mount, first, remove the retaining ring. In some cases the lens of the camera will also need to be removed. Place the front of camera through the hole in the mount and secure with the retaining ring. Replace the lens if removed for installation.

3. The mini-computer system is included to power and interface with the 9000 Series IR Camera. This system should be fix mounted to the UAV via double stick tape or Velcro. You may use a video composite cable to link the mini-computer to a video transmitter, FPV, and/or OSD system. Use the appropriate RCA connector labeled "composite out". When an image is captured, a line of text confirming the file name will appear on the video layer. Use this as confirmation that the image capture function is working properly prior to flight.

4. The mini-computer has an onboard microSD card acting as the "hard drive" of the system. It is internally mounted and cannot be removed while in the case. If reprogramming is necessary, the bottom 4 screws of the case must be removed to access the microSD card in a special adapter on the mini-computer's circuit board.

5. A microSD to SD Card adapter is included with your package. A copy of the image for the microSD card is included on the flash drive. Contact ICI for instruction on reprogramming this card should the OS fail to start on power-up

6. A GPS receiver is internally embedded within the mini-computer system. When the system is powered on, a small red LED, next to the GPS module, will blink at a rate of 1Hz while acquiring satellites. Once it has acquired the satellite signals, it will blink at a rate of 15Hz. Time for acquisition is 1-3 minutes. It is important to note that the enclosed GPS module can have an adverse effect on the flight controller's GPS module. Please keep a safe distance between the two of at least 6 inches. Test for interference by using the assistant software of your flight controller to insure you are receiving proper data.

7. A standard USB to mini USB coiled cable is provided to connect the bottom USB port of the mini-computer to the ICI 9000 Series IR Camera. This cable provides power and data connection to the camera.

8. A power adapter cable, with a 5V UBEC, is supplied. One end will splice into the primary, or if preferred, an independent 2S-6S battery supply line. The other end will connect to the computer via the micro USB power connector. When applying power to the UAV, please do so with the UBEC power cable disconnected from the mini-computer. Once the UAV has powered up, you may plug the USB power connector into the mini-computer. Reverse this step when powering down the UAV by disconnecting power from the computer before disconnecting power from the aircraft.

9. An 8 gig flash drive is included with the system and should be installed in the upper USB port of the mini-computer. If it is not, a warning message will overlay the video as an indication of this fact. Images captured will be stored in the "Images" directory on this drive and will have an x16 extension. These files will only be editable with IR Flash Software. After image acquisition, open the entire set of images in IR-Flash to set the appropriate palette, level and span. Do this by setting the parameters to the first image and then "apply colors to all images" under the Tools Menu. You must then save these images as .jpg extensions which will apply the appropriate date, time and GPS data to each image for post processing. The flash drive also has a directory named "CaptureRate". Within this directory is a file named "capture.txt". In this file is a single integer. This number represents the time between image acquisitions. When the image capture function is engaged, the images will capture at a rate, in seconds, represented by this number. It can be modified by editing the file with a standard text editor from within windows. You may also map the image capture function to a momentary switch. This will allow you to manually capture images one at a time.

10. An image capture trigger cable is provided and connects from the line coming from the expansion port of the mini-computer, to the receiver or flight controller. Please note the yellow heat shrink on the two connectors to ensure proper orientation. Connect to the flight controller, if available, to automate the image capture function within the photogrammetry tools. Or, connect to the receiver and map a switch to that channel, to manually control the image capture function from the transmitter.