

# ADC Snap



## System Overview

90 gram 1.3 MPel Multi-spectral  
R-G-NIR System principally designed for operation aboard unmanned aircraft

The ADC Snap, ADC Micro and ADC Lite are specifically designed for operation aboard unmanned aerial vehicles. The advantage of the ADC Snap is that its faster image capture time optimizes this camera for high-speed flight close to the ground or for use with UAV systems that are prone to yawing, pitching or rolling.

## Multi-spectral Bands

3-Fixed Green, Red, NIR (Equivalent to Landsat TM2, TM3, TM4)

## Indicators

The ADC Snap Busy LED is located on the lower right side of the front of the camera. Red indicates a Busy condition. Green, a Not Busy condition. When this indicator is lit green, the camera is ready to capture a new image.

The ADC Snap Busy LED glows red at the exact beginning of integration of an image into the camera's sensor. The indicator stays red until the image is saved in memory. During this time, the camera is not able to capture another image. When this LED is green, the camera is not busy and another image may be captured.

## Memory

16 GB Micro SD Memory Card provided standard with equipment

In order to run at the fastest image cycle time we recommend use of 16GB Sandisk Extreme Plus or Extreme Pro Class 10/UHS-1 Micro SD memory cards. Camera cycle time with these cards should be less than 1 second in the raw 10 bit RWS10 format.

## Default Ports

### Video (NTSC or PAL)

Used to view system menus for system configuration or to act as camera viewfinder. The video format and viewing mode (system menus or viewfinder) are user selectable.

Video is accessible through the ADC Snap's Interconnection Pins 12 and 13. These pins may be connected to the Test and Control Box Assembly which contains an RCA video connector or they can be wired to a monitor or video transmitter via an included Un-terminated System Integration Cable.

### USB

USB 2.0 used to connect the camera to a computer for system configuration

The USB 2.0 connection for the camera is located on top of the housing as shown in the illustration below. For reliable USB 2.0 communications, good quality USB 2.0 rated cables should be used that are less than 2 meters in length. The camera uses too much initial power to be supplied directly from the USB cable. It must have an external power supply attached prior to being plugged in for enumeration. The camera always operates as a USB Disk device when attached to a host. The camera will be recognized by its volume ID "TTCDISKS" when the Pixelwrench2 GPS Distiller application is started. Files can be dragged and dropped to and from the camera from any personal computer that has USB disk drivers.

### RS232 Serial

Principally used to connect to devices that stream continuous GP coordinates or other location information in standard NMEA sentences to the camera through its Interconnection Pins 7 and 8. These pins may be connected to the Test and Control Box Assembly for connection via a 3.5mm stereo phone plug to an external device or wired directly to the external device via an included Un-terminated System Integration Cable.

By default, the camera serial port is configured 4800 – 8 – N – 1, the NMEA 0183 standard configuration. Serial configuration may be altered via system menus. GPS coordinates and other data is saved in the camera's image memory as metadata. This may be extracted by PixelWrench2 or other application software. The serial port may also be used to control the camera from an external serial interface using simple text commands (see User Manual for details).

### Remote Shutter

Used as an external trigger to initiate image capture through the ADC Snap's Interconnection Pin 5.

Images are triggered by grounding pin 5.

## Power

+ 9.0 VDC to + 14.7 VDC (160 mA); Two watts nominal

## ADC Snap Sensor

Range	520nm to 920nm	520nm to 920nm
Size in Pixels	1.3 MPel	1280 x 1024 pixels
Dimensions	6.59 mm x 4.9 mm	
Pixel Size	5.0 microns	

## Optics

Focal Length	8.43 mm fixed lens	
Aperture	f/3.2	
Horizontal Angle of View	37.67 degrees	Consult FOV calculator in PixelWrench2 - See also FOV Android APP
Vertical Angle of View	28.75 degrees	Consult FOV calculator in PixelWrench2 - See also FOV Android APP
Default Depth of Field	~3 m to infinity	Consult FOV calculator in PixelWrench2 - See also FOV Android APP
<b>Image Exposure time</b>		
	Auto or menu-selectable in ms	
<b>Image Triggering</b>		
	On-Camera Shutter Release, Auto-Timer, Remote Shutter (External Trigger), RS232 Serial Trigger	
<b>Default Image Dimensions</b>		
	1.3 Megapixel (1280 x 1024 pixels)	ADC Snap image size may be adjusted to an alternate image size via system menu selection
<b>Default Image Storage Medium</b>		
	The ADC Snap stores all images and metadata on a standard 16 GB Micro SD memory card which is inserted into the camera in the Memory Card slot beneath the Busy Indicator.	The Micro SD card may be inserted directly into a computer that will accept such cards or it may be connected to a computer through a Micro SD/USB adapter provided with the camera.
<b>Default Image File Types</b>		
	.RWS is the snap shutter version of the .RAW files saved by other cameras. After removal of noise and pixel reordering, these are converted to .RAW images.	The shifting scheme of the sensor and the fact that these sensors are susceptible to high dark current noise require correcting these problems during post-processing on the host computer. Consequently, the images taken by the ADC Snap camera have different file extensions than those of the rest of the ADC family to enable PixelWrench2 to recognize that special post-processing correction to these images will be necessary. Once processed, image file formats are translatable via PixelWrench2 into other common image file types such as BMP, JPEG, TIFF, PNG, etc.  Images initially appear as monochrome images. PixelWrench2's Index Tools enable users to translate monochrome images to false color images and then derive vegetation indices such as NDVI from these.  The RWS files are quite large – 2.6 MB per file for the 10-bit format and 1.3 MB per file for the 8-bit format.
	.DCS is a snap shutter variant of the .DCM compressed format.	
<b>Typical Number of Images Captured Per Mission</b>		
	Approximately 5000 + images depending upon selected file type (i.e., 10 bit DCM lossless, 8 bit RAW, and 10 bit RAW file types).	Higher numbers of images may be captured per mission by substituting an optional larger Micro SD Card for the 16 GB card included in the camera's standard contents.
<b>Image Capture Interval</b> (Speed dependent on SD Card Features)		
	Capacity: (DCS10) Approx.1.8MB per image (RWS10)2.6MB per image (RWS8) 1.3 MB per image  Rate: (DCS10) Capture to end of cycle: ~ 3 sec. (RWS10) Capture to ready : 1.0 sec. (RWS 8) Capture to ready : 1.2 sec.	The highest rate of capture is with the 10 Bit RWS file format, at about one picture per every second, depending on the speed of the micro SD memory card. For users who want more pictures on a card, and do not need precision, the 8 bit RWS format is the next fastest, about 2.5 to 3.5 seconds per picture.  The camera can capture still images at reduced resolution to speed up the camera cycle time. Choose 1280 X 1024 for full resolution shots and 1+ second cycle time. Choose 640 X 512 for half resolution and .5 second cycle time.
<b>Included Software</b>		
	PixelWrench2 is included with each purchase of an ADC Snap	PixelWrench2 enables users to convert images captured in Tetracam native file formats to file types commonly used with other software. The software also enables users to convert the green, red and invisible NIR bands captured by the camera as a monochrome image into blue, green and red respectively for presentation in false color images and, false color images.
<b>Weight</b>		
	90 g (3.17 ounces)	
<b>Dimensions</b>		

75 mm x 59 mm x 33 mm  
2.97" x 2.33" x 1.29"

Environmental	
Temperature	0°C to 40°C
Humidity	Less than 85% relative humidity, non-condensing