

Tetracam ADC - Frequently Asked Questions

Q: What does ADC stand for?

A: Agricultural Digital Camera. Our first version of the ADC was introduced in 1994.

Q: What's different about the ADC compared to a regular digital camera?

A: The ADC is limited to capturing the spectrum from 0.52 microns (green light) to the near-infrared, no blue wavelengths are captured. A "regular" digital camera is designed to see only the visible spectrum but cannot capture near-infrared wavelengths.

Q: Do I need a framegrabber or any special computer hardware to use an ADC.

A: No. The camera interface is USB and the application program supplied with the ADC is a Windows app.

Q: How many pixels are in an ADC image?

A: The ADC is a 3.2 mPel (million pixel) device.

Q: What's the ADC's ground resolution?

A: Of course it varies with the altitude of the aircraft carrying the camera. For example; using the 3.2 mPel ADC fitted with an 8.5mm lens a 1/2 meter/pixel ground resolution is achieved at 1340 meters (4400') AGL.

Q: What type and how many sensors does it use?

A: One. The sensor is a highly integrated CMOS device.

Q: Can the ADC be used to take regular color pictures?

A: No. It's not sensitive to blue light.

Q: Can the ADC see thermal information?

A: No. The longest wavelengths it's sensitive to are near-infrared, well below the infrared thermal range.

Q: Why photograph plants in visible and near infrared bands?

A: The reflectances of plant canopies have certain characteristic curves. By measuring the difference in reflectance at various points in the reflectance curve we can differentiate plant from background, measure stress and infer the general condition of the plant.

Q: What is a "Vegetation Index"?

A: Vegetation Indexes are equations that ratio specific reflectance bands against one another at each point in the image. The most common is NDVI - Normalized Differential Vegetation Index. It is a normalized ratio of the red and NIR bands.

Q: Can the band widths and center frequencies be modified or selected by the user.

A: The CMOS sensor is fitted with a Bayer filter mask. That mask can't be modified. For narrow band or very specialized intervals the Tetracam MCA is recommended. The ADC bands are fundamentally

equivalent to Landsat TM2, TM3 and TM4.

Q: What kind of computer interface does the ADC have?

A: USB 1.1

Q: What other inputs and outputs does the ADC have?

A: Inputs include; external power (5 - 12 VDC), external trigger and serial-in for NMEA GPS data. Outputs; Video, switchable from NTSC to several PAL formats.

Q: Does the camera come with special software?

A: The ADC ships with PixelWrench2. PW2 provides full access and control of the camera, image management and a several multi-spectral specific functions including the ability to generate several vegetation indexes and canopy/background segmentation.

Q: Can the camera be used for aerial photography?

A: Certainly. The standard ADC is ideal for both ground truthing and aerial capture. The ADC is not weather proof. It must be protected from the elements.

Q: What's an ADC Air and when would I use it instead of the standard ADC?

A: The ADC Air is a hardened weather proofed ADC camera module. It does require external power and visual interface to the camera is provided by video out or USB.

Q: What file format are images stored in?

A: DCM - A losslessly compressed format with 10 bit pixel depth.
RAW10 - An uncompressed 10 bit format.
RAW8 - An uncompressed 8 bit format.

Q: How is the ADC triggered?

A: The ADC can be triggered using a button on the camera, an external trigger button (available as an option) or through the USB interface using PixelWrench2 or SensorLink. In UAV applications the ADC can be triggered via a simple switch closure of an RC solenoid.

Q: How quickly can pictures be taken?

A: Trigger to ready times vary somewhat depending on the write speed of the CompactFlash card in the camera. Typical intervals are;
DCM format - 7 seconds
RAW10 - 4 seconds
RAW8 - 3 seconds

Q: Can the camera trigger itself at fixed intervals?

A: Yes. The camera has an interval capture mode. If it's set, manually trigger the camera once to toggle it on, trigger again to toggle it off. Intervals are settable from 3 to 99 seconds.

Q: How are images stored in the camera?

A: On a CompactFlash memory card.

Q: How "automatic" is an ADC in use?

A: The ADC can be set to auto exposure mode (default) or fixed exposure mode. Both modes can be adjusted using the Up/Down arrow buttons on the camera back.

Q: Can I change lenses?

A: Yes. The ADC camera body is configured with a CS mount. All commercially available CS mount lenses will fit. All C-mount lenses will fit when used with a simple C to CS adapter ring. Any lens fitted must be able to cover a 1/2 inch optical format.

Q: Can the ADC be used in a UAV?

A: Yes. ADCs are routinely mounted in Unmanned Air Vehicles of all types, both fixed and rotor wing.

Q: How much does an ADC weigh?

A: Fitted with 8.5mm lens without AA batteries - 450 grams
With 8.5mm lens and 8 AA alkaline batteries - 640 grams

Q: Who's using the ADC?

A: It's a long list. Government agencies and universities around the world including USDA, Instituto de Agricultura Sostenible (IAS), Cordoba Spain, Agriculture Canada, private agronomists and growers around the globe.

Q: How much does an ADC system cost?

A: Tetracam has authorized resellers world wide. Contact the reseller in your area for pricing information. Links to all our resellers are located on the Agricultural Multispectral page of Tetracam's corporate website. In the USA, contact Tetracam directly.